337 Human Secreted Proteins

Related Applications

5   This application is a continuation-in-part of PCT/US02/09785, filed March 19,

2002, which in turn claims benefit of the following:

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
PCT/US02/09785	Continuation-in-part of	10/100,683	03/19/02
10/100,683	Non-provisional of	60/277,340	03/21/01
10/100,683	Non-provisional of	60/306,171	07/19/01
10/100,683	Non-provisional of	60/331,287	11/13/01
10/100,683	Continuation-in-part of	09/981,876	10/19/01
09/981,876	Divisional of	09/621,011	07/20/00
09/621,011	Continuation of	09/148,545	09/04/98
09/148,545	Continuation-in-part of	PCT/US98/04482	03/06/98
10/100,683	Continuation-in-part of	09/621,011	07/20/00
09/621,011	Continuation of	09/148,545	09/04/98
09/148,545	Continuation-in-part of	PCT/US98/04482	03/06/98
10/100,683	Continuation-in-part of	09/148,545	09/04/98
09/148,545	Continuation-in-part of	PCT/US98/04482	03/06/98
10/100,683	Continuation-in-part of	PCT/US98/04482	03/06/98
PCT/US98/04482	Non-provisional of	60/040,162	03/07/97
PCT/US98/04482	Non-provisional of	60/040,333	03/07/97
PCT/US98/04482	Non-provisional of	60/038,621	03/07/97
PCT/US98/04482	Non-provisional of	60/040,161	03/07/97
PCT/US98/04482	Non-provisional of	60/040,626	03/07/97
PCT/US98/04482	Non-provisional of	60/040,334	03/07/97
PCT/US98/04482	Non-provisional of	60/040,336	03/07/97
PCT/US98/04482	Non-provisional of	60/040,163	03/07/97
PCT/US98/04482	Non-provisional of	60/047,615	05/23/97
PCT/US98/04482	Non-provisional of	60/047,600	05/23/97
PCT/US98/04482	Non-provisional of	60/047,597	05/23/97
PCT/US98/04482	Non-provisional of	60/047,502	05/23/97
PCT/US98/04482	Non-provisional of	60/047,633	05/23/97
PCT/US98/04482	Non-provisional of	60/047,583	05/23/97
PCT/US98/04482	Non-provisional of	60/047,617	05/23/97
PCT/US98/04482	Non-provisional of	60/047,618	05/23/97
PCT/US98/04482	Non-provisional of	60/047,503	05/23/97
PCT/US98/04482	Non-provisional of	60/047,592	05/23/97
PCT/US98/04482	Non-provisional of	60/047,581	05/23/97
PCT/US98/04482	Non-provisional of	60/047,584	05/23/97
PCT/US98/04482	Non-provisional of	60/047,500	05/23/97
PCT/US98/04482	Non-provisional of	60/047,587	05/23/97
PCT/US98/04482	Non-provisional of	60/047,492	05/23/97
PCT/US98/04482	Non-provisional of	60/047,598	05/23/97
PCT/US98/04482	Non-provisional of	60/047,613	05/23/97

PCT/US98/04482	Non-provisional of	60/047,582	05/23/97
PCT/US98/04482	Non-provisional of	60/047,596	05/23/97
PCT/US98/04482	Non-provisional of	60/047,612	05/23/97
PCT/US98/04482	Non-provisional of	60/047,632	05/23/97
PCT/US98/04482	Non-provisional of	60/047,601	05/23/97
PCT/US98/04482	Non-provisional of	60/043,580	04/11/97
PCT/US98/04482	Non-provisional of	60/043,568	04/11/97
PCT/US98/04482	Non-provisional of	60/043,314	04/11/97
PCT/US98/04482	Non-provisional of	60/043,569	04/11/97
PCT/US98/04482	Non-provisional of	60/043,311	04/11/97
PCT/US98/04482	Non-provisional of	60/043,671	04/11/97
PCT/US98/04482	Non-provisional of	60/043,674	04/11/97
PCT/US98/04482	Non-provisional of	60/043,669	04/11/97
PCT/US98/04482	Non-provisional of	60/043,312	04/11/97
PCT/US98/04482	Non-provisional of	60/043,313	04/11/97
PCT/US98/04482	Non-provisional of	60/043,672	04/11/97
PCT/US98/04482	Non-provisional of	60/043,315	04/11/97
PCT/US98/04482	Non-provisional of	60/048,974	06/06/97
PCT/US98/04482	Non-provisional of	60/056,886	08/22/97
PCT/US98/04482	Non-provisional of	60/056,877	08/22/97
PCT/US98/04482	Non-provisional of	60/056,889	08/22/97
PCT/US98/04482	Non-provisional of	60/056,893	08/22/97
PCT/US98/04482	Non-provisional of	60/056,630	08/22/97
PCT/US98/04482	Non-provisional of	60/056,878	08/22/97
PCT/US98/04482	Non-provisional of	60/056,662	08/22/97
PCT/US98/04482	Non-provisional of	60/056,872	08/22/97
PCT/US98/04482	Non-provisional of	60/056,882	08/22/97
PCT/US98/04482	Non-provisional of	60/056,637	08/22/97
PCT/US98/04482	Non-provisional of	60/056,903	08/22/97
PCT/US98/04482	Non-provisional of	60/056,888	08/22/97
PCT/US98/04482	Non-provisional of	60/056,879	08/22/97
PCT/US98/04482	Non-provisional of	60/056,880	08/22/97
PCT/US98/04482	Non-provisional of	60/056,894	08/22/97
PCT/US98/04482	Non-provisional of	60/056,911	08/22/97
PCT/US98/04482	Non-provisional of	60/056,636	08/22/97
PCT/US98/04482	Non-provisional of	60/056,874	08/22/97
PCT/US98/04482	Non-provisional of	60/056,910	08/22/97
PCT/US98/04482	Non-provisional of	60/056,864	08/22/97
PCT/US98/04482	Non-provisional of	60/056,631	08/22/97
PCT/US98/04482	Non-provisional of	60/056,845	08/22/97
PCT/US98/04482	Non-provisional of	60/056,892	08/22/97
PCT/US98/04482	Non-provisional of	60/047,595	05/23/97
PCT/US98/04482	Non-provisional of	60/057,761	09/05/97
PCT/US98/04482	Non-provisional of	60/047,599	05/23/97
PCT/US98/04482	Non-provisional of	60/047,588	05/23/97
PCT/US98/04482	Non-provisional of	60/047,585	05/23/97
PCT/US98/04482	Non-provisional of	60/047,586	05/23/97
PCT/US98/04482	Non-provisional of	60/047,590	05/23/97
PCT/US98/04482	Non-provisional of	60/047,594	05/23/97
PCT/US98/04482	Non-provisional of	60/047,589	05/23/97

PCT/US98/04482	Non-provisional of	60/047,593	05/23/97
PCT/US98/04482	Non-provisional of	60/047,614	05/23/97
PCT/US98/04482	Non-provisional of	60/043,578	04/11/97
PCT/US98/04482	Non-provisional of	60/043,576	04/11/97
PCT/US98/04482	Non-provisional of	60/047,501	05/23/97
PCT/US98/04482	Non-provisional of	60/043,670	04/11/97
PCT/US98/04482	Non-provisional of	60/056,632	08/22/97
PCT/US98/04482	Non-provisional of	60/056,664	08/22/97
PCT/US98/04482	Non-provisional of	60/056,876	08/22/97
PCT/US98/04482	Non-provisional of	60/056,881	08/22/97
PCT/US98/04482	Non-provisional of	60/056,909	08/22/97
PCT/US98/04482	Non-provisional of	60/056,875	08/22/97
PCT/US98/04482	Non-provisional of	60/056,862	08/22/97
PCT/US98/04482	Non-provisional of	60/056,887	08/22/97
PCT/US98/04482	Non-provisional of	60/056,908	08/22/97
PCT/US98/04482	Non-provisional of	60/048,964	06/06/97
PCT/US98/04482	Non-provisional of	60/057,650	09/05/97
PCT/US98/04482	Non-provisional of	60/056,884	08/22/97
10/100,683	Continuation-in-part of	09/882,171	06/18/01
09/882,171	Non-provisional of	60/190,068	03/17/00
09/882,171	Continuation of	09/809,391	03/16/01
09/809,391	Continuation-in-part of	09/149,476	09/08/98
09/149,476	Continuation-in-part of	PCT/US98/04493	03/06/98
10/100,683	Continuation-in-part of	09/809,391	03/16/01
09/809,391	Non-provisional of	60/190,068	03/17/00
09/809,391	Continuation-in-part of	09/149,476	09/08/98
09/149,476	Continuation-in-part of	PCT/US98/04493	03/06/98
10/100,683	Continuation-in-part of	09/149,476	09/08/98
09/149,476	Continuation-in-part of	PCT/US98/04493	03/06/98
10/100,683	Continuation-in-part of	PCT/US98/04493	03/06/98
PCT/US98/04493	Non-provisional of	60/040,161	03/07/97
PCT/US98/04493	Non-provisional of	60/040,162	03/07/97
PCT/US98/04493	Non-provisional of	60/040,333	03/07/97
PCT/US98/04493	Non-provisional of	60/038,621	03/07/97
PCT/US98/04493	Non-provisional of	60/040,626	03/07/97
PCT/US98/04493	Non-provisional of	60/040,334	03/07/97
PCT/US98/04493	Non-provisional of	60/040,336	03/07/97
PCT/US98/04493	Non-provisional of	60/040,163	03/07/97
PCT/US98/04493	Non-provisional of	60/047,600	05/23/97
PCT/US98/04493	Non-provisional of	60/047,615	05/23/97
PCT/US98/04493	Non-provisional of	60/047,597	05/23/97
PCT/US98/04493	Non-provisional of	60/047,502	05/23/97
PCT/US98/04493	Non-provisional of	60/047,633	05/23/97
PCT/US98/04493	Non-provisional of	60/047,583	05/23/97
PCT/US98/04493	Non-provisional of	60/047,617	05/23/97
PCT/US98/04493	Non-provisional of	60/047,618	05/23/97
PCT/US98/04493	Non-provisional of	60/047,503	05/23/97
PCT/US98/04493	Non-provisional of	60/047,592	05/23/97
PCT/US98/04493	Non-provisional of	60/047,581	05/23/97
PCT/US98/04493	Non-provisional of	60/047,584	05/23/97

PCT/US98/04493	Non-provisional of	60/047,500	05/23/97
PCT/US98/04493	Non-provisional of	60/047,587	05/23/97
PCT/US98/04493	Non-provisional of	60/047,492	05/23/97
PCT/US98/04493	Non-provisional of	60/047,598	05/23/97
PCT/US98/04493	Non-provisional of	60/047,613	05/23/97
PCT/US98/04493	Non-provisional of	60/047,582	05/23/97
PCT/US98/04493	Non-provisional of	60/047,596	05/23/97
PCT/US98/04493	Non-provisional of	60/047,612	05/23/97
PCT/US98/04493	Non-provisional of	60/047,632	05/23/97
PCT/US98/04493	Non-provisional of	60/047,601	05/23/97
PCT/US98/04493	Non-provisional of	60/043,580	04/11/97
PCT/US98/04493	Non-provisional of	60/043,568	04/11/97
PCT/US98/04493	Non-provisional of	60/043,314	04/11/97
PCT/US98/04493	Non-provisional of	60/043,569	04/11/97
PCT/US98/04493	Non-provisional of	60/043,311	04/11/97
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PCT/US98/04493	Non-provisional of	60/043,674	04/11/97
PCT/US98/04493	Non-provisional of	60/043,669	04/11/97
PCT/US98/04493	Non-provisional of	60/043,312	04/11/97
PCT/US98/04493	Non-provisional of	60/043,313	04/11/97
PCT/US98/04493	Non-provisional of	60/043,672	04/11/97
PCT/US98/04493	Non-provisional of	60/043,315	04/11/97
PCT/US98/04493	Non-provisional of	60/048,974	06/06/97
PCT/US98/04493	Non-provisional of	60/056,886	08/22/97
PCT/US98/04493	Non-provisional of	60/056,877	08/22/97
PCT/US98/04493	Non-provisional of	60/056,889	08/22/97
PCT/US98/04493	Non-provisional of	60/056,893	08/22/97
PCT/US98/04493	Non-provisional of	60/056,630	08/22/97
PCT/US98/04493	Non-provisional of	60/056,878	08/22/97
PCT/US98/04493	Non-provisional of	60/056,662	08/22/97
PCT/US98/04493	Non-provisional of	60/056,872	08/22/97
PCT/US98/04493	Non-provisional of	60/056,882	08/22/97
PCT/US98/04493	Non-provisional of	60/056,637	08/22/97
PCT/US98/04493	Non-provisional of	60/056,903	08/22/97
PCT/US98/04493	Non-provisional of	60/056,888	08/22/97
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PCT/US98/04493	Non-provisional of	60/056,880	08/22/97
PCT/US98/04493	Non-provisional of	60/056,894	08/22/97
PCT/US98/04493	Non-provisional of	60/056,911	08/22/97
PCT/US98/04493	Non-provisional of	60/056,636	08/22/97
PCT/US98/04493	Non-provisional of	60/056,874	08/22/97
PCT/US98/04493	Non-provisional of	60/056,910	08/22/97
PCT/US98/04493	Non-provisional of	60/056,864	08/22/97
PCT/US98/04493	Non-provisional of	60/056,631	08/22/97
PCT/US98/04493	Non-provisional of	60/056,845	08/22/97
PCT/US98/04493	Non-provisional of	60/056,892	08/22/97
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PCT/US98/04493	Non-provisional of	60/047,593	05/23/97
PCT/US98/04493	Non-provisional of	60/047,614	05/23/97
PCT/US98/04493	Non-provisional of	60/043,578	04/11/97
PCT/US98/04493	Non-provisional of	60/043,576	04/11/97
PCT/US98/04493	Non-provisional of	60/047,501	05/23/97
PCT/US98/04493	Non-provisional of	60/043,670	04/11/97
PCT/US98/04493	Non-provisional of	60/056,632	08/22/97
PCT/US98/04493	Non-provisional of	60/056,664	08/22/97
PCT/US98/04493	Non-provisional of	60/056,876	08/22/97
PCT/US98/04493	Non-provisional of	60/056,881	08/22/97
PCT/US98/04493	Non-provisional of	60/056,909	08/22/97
PCT/US98/04493	Non-provisional of	60/056,875	08/22/97
PCT/US98/04493	Non-provisional of	60/056,862	08/22/97
PCT/US98/04493	Non-provisional of	60/056,887	08/22/97
PCT/US98/04493	Non-provisional of	60/056,908	08/22/97
PCT/US98/04493	Non-provisional of	60/048,964	06/06/97
PCT/US98/04493	Non-provisional of	60/057,650	09/05/97
PCT/US98/04493	Non-provisional of	60/056,884	08/22/97
PCT/US98/04493	Non-provisional of	60/057,669	09/05/97
PCT/US98/04493	Non-provisional of	60/049,610	06/13/97
PCT/US98/04493	Non-provisional of	60/061,060	10/02/97
PCT/US98/04493	Non-provisional of	60/051,926	07/08/97
PCT/US98/04493	Non-provisional of	60/052,874	07/16/97
PCT/US98/04493	Non-provisional of	60/058,785	09/12/97
PCT/US98/04493	Non-provisional of	60/055,724	08/18/97
10/100,683	Continuation-in-part of	10/058,993	01/30/02
10/058,993	Non-provisional of	60/265,583	02/02/01
10/058,993	Continuation-in-part of	09/852,659	05/11/01
09/852,659	Continuation-in-part of	09/152,060	09/11/98
09/152,060	Continuation-in-part of	PCT/US98/04858	03/12/98
10/058,993	Continuation-in-part of	09/853,161	05/11/01
09/853,161	Continuation-in-part of	09/152,060	09/11/98
09/152,060	Continuation-in-part of	PCT/US98/04858	03/12/98
10/058,993	Continuation-in-part of	09/852,797	05/11/01
09/852,797	Continuation-in-part of	09/152,060	09/11/98
09/152,060	Continuation-in-part of	PCT/US98/04858	03/12/98
10/100,683	Continuation-in-part of	09/852,659	05/11/01
09/852,659	Non-provisional of	60/265,583	02/02/01
09/852,659	Continuation-in-part of	09/152,060	09/11/98
09/152,060	Continuation-in-part of	PCT/US98/04858	03/12/98
10/100,683	Continuation-in-part of	09/853,161	05/11/01
09/853,161	Non-provisional of	60/265,583	02/02/01
09/853,161	Continuation-in-part of	09/152,060	09/11/98
09/152,060	Continuation-in-part of	PCT/US98/04858	03/12/98
10/100,683	Continuation-in-part of	09/852,797	05/11/01

09/852,797	Non-provisional of	60/265,583	02/02/01
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09/152,060	Continuation-in-part of	PCT/US98/04858	03/12/98
10/100,683	Continuation-in-part of	09/152,060	09/11/98
09/152,060	Continuation-in-part of	PCT/US98/04858	03/12/98
10/100,683	Continuation-in-part of	PCT/US98/04858	03/12/98
PCT/US98/04858	Non-provisional of	60/040,762	03/14/97
PCT/US98/04858	Non-provisional of	60/040,710	03/14/97
PCT/US98/04858	Non-provisional of	60/050,934	05/30/97
PCT/US98/04858	Non-provisional of	60/048,100	05/30/97
PCT/US98/04858	Non-provisional of	60/048,357	05/30/97
PCT/US98/04858	Non-provisional of	60/048,189	05/30/97
PCT/US98/04858	Non-provisional of	60/057,765	09/05/97
PCT/US98/04858	Non-provisional of	60/048,970	06/06/97
PCT/US98/04858	Non-provisional of	60/068,368	12/19/97
10/100,683	Continuation-in-part of	10/059,395	01/31/02
10/059,395	Divisional of	09/966,262	10/01/01
09/966,262	Continuation of	09/154,707	09/17/98
09/154,707	Continuation-in-part of	PCT/US98/05311	03/19/98
10/100,683	Continuation-in-part of	09/984,245	10/29/01
09/984,245	Divisional of	09/154,707	09/17/98
09/154,707	Continuation-in-part of	PCT/US98/05311	03/19/98
10/100,683	Continuation-in-part of	09/983,966	10/26/01
09/983,966	Divisional of	09/154,707	09/17/98
09/154,707	Continuation-in-part of	PCT/US98/05311	03/19/98
10/100,683	Continuation-in-part of	09/966,262	10/01/01
09/966,262	Continuation of of	09/154,707	09/17/98
09/154,707	Continuation-in-part of	PCT/US98/05311	03/19/98
10/100,683	Continuation-in-part of	09/154,707	09/17/98
09/154,707	Continuation-in-part of	PCT/US98/05311	03/19/98
10/100,683	Continuation-in-part of	PCT/US98/05311	03/03/98
PCT/US98/05311	Non-provisional of	60/041,277	03/21/97
PCT/US98/05311	Non-provisional of	60/042,344	03/21/97
PCT/US98/05311	Non-provisional of	60/041,276	03/21/97
PCT/US98/05311	Non-provisional of	60/041,281	03/21/97
PCT/US98/05311	Non-provisional of	60/048,094	05/30/97
PCT/US98/05311	Non-provisional of	60/048,350	05/30/97
PCT/US98/05311	Non-provisional of	60/048,188	05/30/97
PCT/US98/05311	Non-provisional of	60/048,135	05/30/97
PCT/US98/05311	Non-provisional of	60/050,937	05/30/97
PCT/US98/05311	Non-provisional of	60/048,187	05/30/97
PCT/US98/05311	Non-provisional of	60/048,099	05/30/97
PCT/US98/05311	Non-provisional of	60/048,352	05/30/97
PCT/US98/05311	Non-provisional of	60/048,186	05/30/97
PCT/US98/05311	Non-provisional of	60/048,069	05/30/97
PCT/US98/05311	Non-provisional of	60/048,095	05/30/97
PCT/US98/05311	Non-provisional of	60/048,131	05/30/97
PCT/US98/05311	Non-provisional of	60/048,096	05/30/97
PCT/US98/05311	Non-provisional of	60/048,355	05/30/97
PCT/US98/05311	Non-provisional of	60/048,160	05/30/97

PCT/US98/05311	Non-provisional of	60/048,351	05/30/97
PCT/US98/05311	Non-provisional of	60/048,154	05/30/97
PCT/US98/05311	Non-provisional of	60/054,804	08/05/97
PCT/US98/05311	Non-provisional of	60/056,370	08/19/97
PCT/US98/05311	Non-provisional of	60/060,862	10/02/97
10/100,683	Continuation-in-part of	09/814,122	03/22/01
09/814,122	Continuation of	09/577,145	05/24/00
09/577,145	Continuation of	09/166,780	10/06/98
09/166,780	Continuation-in-part of	PCT/US98/06801	04/07/98
10/100,683	Continuation-in-part of	PCT/US98/06801	04/07/98
PCT/US98/06801	Non-provisional of	60/042,726	04/08/97
PCT/US98/06801	Non-provisional of	60/042,727	04/08/97
PCT/US98/06801	Non-provisional of	60/042,728	04/08/97
PCT/US98/06801	Non-provisional of	60/042,754	04/08/97
PCT/US98/06801	Non-provisional of	60/042,825	04/08/97
PCT/US98/06801	Non-provisional of	60/048,068	05/30/97
PCT/US98/06801	Non-provisional of	60/048,070	05/30/97
PCT/US98/06801	Non-provisional of	60/048,184	05/30/97
10/100,683	Continuation-in-part of	PCT/US98/06801	04/07/97
PCT/US98/06801	Non-provisional of	60/042,726	04/08/97
PCT/US98/06801	Non-provisional of	60/042,727	04/08/97
PCT/US98/06801	Non-provisional of	60/042,728	04/08/97
PCT/US98/06801	Non-provisional of	60/042,754	04/08/97
PCT/US98/06801	Non-provisional of	60/042,825	04/08/97
PCT/US98/06801	Non-provisional of	60/048,068	05/30/97
PCT/US98/06801	Non-provisional of	60/048,070	05/30/97
PCT/US98/06801	Non-provisional of	60/048,184	05/30/97
10/100,683	Continuation-in-part of	PCT/US98/10868	05/28/98
PCT/US98/10868	Non-provisional of	60/044,039	05/30/97
PCT/US98/10868	Non-provisional of	60/048,093	05/30/97
PCT/US98/10868	Non-provisional of	60/048,190	05/30/97
PCT/US98/10868	Non-provisional of	60/050,935	05/30/97
PCT/US98/10868	Non-provisional of	60/048,101	05/30/97
PCT/US98/10868	Non-provisional of	60/048,356	05/30/97
PCT/US98/10868	Non-provisional of	60/056,250	08/29/97
PCT/US98/10868	Non-provisional of	60/056,296	08/29/97
PCT/US98/10868	Non-provisional of	60/056,293	08/29/97
10/100,683	Continuation-in-part of	PCT/US98/11422	06/04/98
PCT/US98/11422	Non-provisional of	60/048,885	06/06/97
PCT/US98/11422	Non-provisional of	60/049,375	06/06/97
PCT/US98/11422	Non-provisional of	60/048,881	06/06/97
PCT/US98/11422	Non-provisional of	60/048,880	06/06/97
PCT/US98/11422	Non-provisional of	60/048,896	06/06/97
PCT/US98/11422	Non-provisional of	60/049,020	06/06/97
PCT/US98/11422	Non-provisional of	60/048,876	06/06/97
PCT/US98/11422	Non-provisional of	60/048,895	06/06/97
PCT/US98/11422	Non-provisional of	60/048,884	06/06/97
PCT/US98/11422	Non-provisional of	60/048,894	06/06/97
PCT/US98/11422	Non-provisional of	60/048,971	06/06/97

PCT/US98/11422	Non-provisional of	60/048,964	06/06/97
PCT/US98/11422	Non-provisional of	60/048,882	06/06/97
PCT/US98/11422	Non-provisional of	60/048,899	06/06/97
PCT/US98/11422	Non-provisional of	60/048,893	06/06/97
PCT/US98/11422	Non-provisional of	60/048,900	06/06/97
PCT/US98/11422	Non-provisional of	60/048,901	06/06/97
PCT/US98/11422	Non-provisional of	60/048,892	06/06/97
PCT/US98/11422	Non-provisional of	60/048,915	06/06/97
PCT/US98/11422	Non-provisional of	60/049,019	06/06/97
PCT/US98/11422	Non-provisional of	60/048,970	06/06/97
PCT/US98/11422	Non-provisional of	60/048,972	06/06/97
PCT/US98/11422	Non-provisional of	60/048,916	06/06/97
PCT/US98/11422	Non-provisional of	60/049,373	06/06/97
PCT/US98/11422	Non-provisional of	60/048,875	06/06/97
PCT/US98/11422	Non-provisional of	60/049,374	06/06/97
PCT/US98/11422	Non-provisional of	60/048,917	06/06/97
PCT/US98/11422	Non-provisional of	60/048,949	06/06/97
PCT/US98/11422	Non-provisional of	60/048,974	06/06/97
PCT/US98/11422	Non-provisional of	60/048,883	06/06/97
PCT/US98/11422	Non-provisional of	60/048,897	06/06/97
PCT/US98/11422	Non-provisional of	60/048,898	06/06/97
PCT/US98/11422	Non-provisional of	60/048,962	06/06/97
PCT/US98/11422	Non-provisional of	60/048,963	06/06/97
PCT/US98/11422	Non-provisional of	60/048,877	06/06/97
PCT/US98/11422	Non-provisional of	60/048,878	06/06/97
PCT/US98/11422	Non-provisional of	60/057,645	09/05/97
PCT/US98/11422	Non-provisional of	60/057,642	09/05/97
PCT/US98/11422	Non-provisional of	60/057,668	09/05/97
PCT/US98/11422	Non-provisional of	60/057,635	09/05/97
PCT/US98/11422	Non-provisional of	60/057,627	09/05/97
PCT/US98/11422	Non-provisional of	60/057,667	09/05/97
PCT/US98/11422	Non-provisional of	60/057,666	09/05/97
PCT/US98/11422	Non-provisional of	60/057,764	09/05/97
PCT/US98/11422	Non-provisional of	60/057,643	09/05/97
PCT/US98/11422	Non-provisional of	60/057,769	09/05/97
PCT/US98/11422	Non-provisional of	60/057,763	09/05/97
PCT/US98/11422	Non-provisional of	60/057,650	09/05/97
PCT/US98/11422	Non-provisional of	60/057,584	09/05/97
PCT/US98/11422	Non-provisional of	60/057,647	09/05/97
PCT/US98/11422	Non-provisional of	60/057,661	09/05/97
PCT/US98/11422	Non-provisional of	60/057,662	09/05/97
PCT/US98/11422	Non-provisional of	60/057,646	09/05/97
PCT/US98/11422	Non-provisional of	60/057,654	09/05/97
PCT/US98/11422	Non-provisional of	60/057,651	09/05/97
PCT/US98/11422	Non-provisional of	60/057,644	09/05/97
PCT/US98/11422	Non-provisional of	60/057,765	09/05/97
PCT/US98/11422	Non-provisional of	60/057,762	09/05/97
PCT/US98/11422	Non-provisional of	60/057,775	09/05/97
PCT/US98/11422	Non-provisional of	60/057,648	09/05/97
PCT/US98/11422	Non-provisional of	60/057,774	09/05/97

PCT/US98/11422	Non-provisional of	60/057,649	09/05/97
PCT/US98/11422	Non-provisional of	60/057,770	09/05/97
PCT/US98/11422	Non-provisional of	60/057,771	09/05/97
PCT/US98/11422	Non-provisional of	60/057,761	09/05/97
PCT/US98/11422	Non-provisional of	60/057,760	09/05/97
PCT/US98/11422	Non-provisional of	60/057,776	09/05/97
PCT/US98/11422	Non-provisional of	60/057,778	09/05/97
PCT/US98/11422	Non-provisional of	60/057,629	09/05/97
PCT/US98/11422	Non-provisional of	60/057,628	09/05/97
PCT/US98/11422	Non-provisional of	60/057,777	09/05/97
PCT/US98/11422	Non-provisional of	60/057,634	09/05/97
PCT/US98/11422	Non-provisional of	60/070,923	12/18/97
10/100,683	Continuation-in-part of	PCT/US01/05614	02/21/01
PCT/US01/05614	Non-provisional of	60/184,836	02/24/00
PCT/US01/05614	Non-provisional of	60/193,170	03/29/00
10/100,683	Continuation-in-part of	PCT/US98/12125	06/11/98
PCT/US98/12125	Non-provisional of	60/049,547	06/13/97
PCT/US98/12125	Non-provisional of	60/049,548	06/13/97
PCT/US98/12125	Non-provisional of	60/049,549	06/13/97
PCT/US98/12125	Non-provisional of	60/049,550	06/13/97
PCT/US98/12125	Non-provisional of	60/049,566	06/13/97
PCT/US98/12125	Non-provisional of	60/049,606	06/13/97
PCT/US98/12125	Non-provisional of	60/049,607	06/13/97
PCT/US98/12125	Non-provisional of	60/049,608	06/13/97
PCT/US98/12125	Non-provisional of	60/049,609	06/13/97
PCT/US98/12125	Non-provisional of	60/049,610	06/13/97
PCT/US98/12125	Non-provisional of	60/049,611	06/13/97
PCT/US98/12125	Non-provisional of	60/050,901	06/13/97
PCT/US98/12125	Non-provisional of	60/052,989	06/13/97
PCT/US98/12125	Non-provisional of	60/051,919	07/08/97
PCT/US98/12125	Non-provisional of	60/055,984	08/18/97
PCT/US98/12125	Non-provisional of	60/058,665	09/12/97
PCT/US98/12125	Non-provisional of	60/058,668	09/12/97
PCT/US98/12125	Non-provisional of	60/058,669	09/12/97
PCT/US98/12125	Non-provisional of	60/058,750	09/12/97
PCT/US98/12125	Non-provisional of	60/058,971	09/12/97
PCT/US98/12125	Non-provisional of	60/058,972	09/12/97
PCT/US98/12125	Non-provisional of	60/058,975	09/12/97
PCT/US98/12125	Non-provisional of	60/060,834	10/02/97
PCT/US98/12125	Non-provisional of	60/060,841	10/02/97
PCT/US98/12125	Non-provisional of	60/060,844	10/02/97
PCT/US98/12125	Non-provisional of	60/060,865	10/02/97
PCT/US98/12125	Non-provisional of	60/061,059	10/02/97
PCT/US98/12125	Non-provisional of	60/061,060	10/02/97
10/100,683	Continuation-in-part of	09/627,081	07/27/00
09/627,081	Continuation of	09/213,365	12/17/98
09/213,365	Continuation-in-part of	PCT/US98/13608	06/30/98
10/100,683	Continuation-in-part of	PCT/US98/13608	06/30/98
PCT/US98/13608	Non-provisional of	60/051,480	07/01/97
PCT/US98/13608	Non-provisional of	60/051,381	07/01/97

PCT/US98/13608	Non-provisional of	60/058,663	09/12/97
PCT/US98/13608	Non-provisional of	60/058,598	09/12/97
10/100,683	Continuation-in-part of	09/984,490	10/30/01
09/984,490	Divisional of	09/227,357	01/08/99
09/227,357	Continuation-in-part of	PCT/US98/13684	07/07/98
10/100,683	Continuation-in-part of	09/983,802	10/25/01
09/983,802	Continuation of	09/227,357	10/10/01
09/227,357	Continuation-in-part of	PCT/US98/13684	07/07/98
10/100,683	Continuation-in-part of	09/973,278	10/10/01
09/973,278	Non-provisional of	60/239,899	10/13/00
09/973,278	Continuation-in-part of	09/227,357	01/08/99
09/227,357	Continuation-in-part of	PCT/US98/13684	07/07/98
10/100,683	Continuation-in-part of	PCT/US98/13684	07/07/98
PCT/US98/13684	Non-provisional of	60/051,926	07/08/97
PCT/US98/13684	Non-provisional of	60/052,793	07/08/97
PCT/US98/13684	Non-provisional of	60/051,925	07/08/97
PCT/US98/13684	Non-provisional of	60/051,929	07/08/97
PCT/US98/13684	Non-provisional of	60/052,803	07/08/97
PCT/US98/13684	Non-provisional of	60/052,732	07/08/97
PCT/US98/13684	Non-provisional of	60/051,931	07/08/97
PCT/US98/13684	Non-provisional of	60/051,932	07/08/97
PCT/US98/13684	Non-provisional of	60/051,916	07/08/97
PCT/US98/13684	Non-provisional of	60/051,930	07/08/97
PCT/US98/13684	Non-provisional of	60/051,918	07/08/97
PCT/US98/13684	Non-provisional of	60/051,920	07/08/97
PCT/US98/13684	Non-provisional of	60/052,733	07/08/97
PCT/US98/13684	Non-provisional of	60/052,795	07/08/97
PCT/US98/13684	Non-provisional of	60/051,919	07/08/97
PCT/US98/13684	Non-provisional of	60/051,928	07/08/97
PCT/US98/13684	Non-provisional of	60/055,722	08/18/97
PCT/US98/13684	Non-provisional of	60/055,723	08/18/97
PCT/US98/13684	Non-provisional of	60/055,948	08/18/97
PCT/US98/13684	Non-provisional of	60/055,949	08/18/97
PCT/US98/13684	Non-provisional of	60/055,953	08/18/97
PCT/US98/13684	Non-provisional of	60/055,950	08/18/97
PCT/US98/13684	Non-provisional of	60/055,947	08/18/97
PCT/US98/13684	Non-provisional of	60/055,964	08/18/97
PCT/US98/13684	Non-provisional of	60/056,360	08/18/97
PCT/US98/13684	Non-provisional of	60/055,684	08/18/97
PCT/US98/13684	Non-provisional of	60/055,984	08/18/97
PCT/US98/13684	Non-provisional of	60/055,954	08/18/97
PCT/US98/13684	Non-provisional of	60/058,785	09/12/97
PCT/US98/13684	Non-provisional of	60/058,664	09/12/97
PCT/US98/13684	Non-provisional of	60/058,660	09/12/97
PCT/US98/13684	Non-provisional of	60/058,661	09/12/97
10/100,683	Continuation-in-part of	09/776,724	02/06/01
09/776,724	Non-provisional of	60/180,909	02/08/00
09/776,724	Continuation-in-part of	09/669,688	09/26/00
09/669,688	Continuation of	09/229,982	01/14/99
09/229,982	Continuation-in-part of	PCT/US98/14613	07/15/98

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10/100,683	Continuation-in-part of	09/669,688	09/26/00
09/669,688	Continuation of	09/229,982	01/14/99
09/229,982	Continuation-in-part of	PCT/US98/14613	07/15/98
10/100,683	Continuation-in-part of	09/229,982	01/14/99
09/229,982	Continuation-in-part of	PCT/US98/14613	07/15/98
10/100,683	Continuation-in-part of	PCT/US98/14613	07/15/98
PCT/US98/14613	Non-provisional of	60/052,661	07/16/97
PCT/US98/14613	Non-provisional of	60/052,872	07/16/97
PCT/US98/14613	Non-provisional of	60/052,871	07/16/97
PCT/US98/14613	Non-provisional of	60/052,874	07/16/97
PCT/US98/14613	Non-provisional of	60/052,873	07/16/97
PCT/US98/14613	Non-provisional of	60/052,870	07/16/97
PCT/US98/14613	Non-provisional of	60/052,875	07/16/97
PCT/US98/14613	Non-provisional of	60/053,440	07/22/97
PCT/US98/14613	Non-provisional of	60/053,441	07/22/97
PCT/US98/14613	Non-provisional of	60/053,442	07/22/97
PCT/US98/14613	Non-provisional of	60/056,359	08/18/97
PCT/US98/14613	Non-provisional of	60/055,725	08/18/97
PCT/US98/14613	Non-provisional of	60/055,985	08/18/97
PCT/US98/14613	Non-provisional of	60/055,952	08/18/97
PCT/US98/14613	Non-provisional of	60/055,989	08/18/97
PCT/US98/14613	Non-provisional of	60/056,361	08/18/97
PCT/US98/14613	Non-provisional of	60/055,726	08/18/97
PCT/US98/14613	Non-provisional of	60/055,724	08/18/97
PCT/US98/14613	Non-provisional of	60/055,946	08/18/97
PCT/US98/14613	Non-provisional of	60/055,683	08/18/97
10/100,683	Non-provisional of	60/295,558	06/05/01
10/100,683	Continuation-in-part of	09/820,649	03/30/01
09/820,649	Continuation of	09/666,984	09/21/00
09/666,984	Continuation of	09/236,557	01/26/99
09/236,557	Continuation-in-part of	PCT/US98/15949	07/29/98
10/100,683	Continuation-in-part of	PCT/US98/15949	07/29/98
PCT/US98/15949	Non-provisional of	60/054,212	07/30/97
PCT/US98/15949	Non-provisional of	60/054,209	07/30/97
PCT/US98/15949	Non-provisional of	60/054,234	07/30/97
PCT/US98/15949	Non-provisional of	60/054,218	07/30/97
PCT/US98/15949	Non-provisional of	60/054,214	07/30/97
PCT/US98/15949	Non-provisional of	60/054,236	07/30/97
PCT/US98/15949	Non-provisional of	60/054,215	07/30/97
PCT/US98/15949	Non-provisional of	60/054,211	07/30/97
PCT/US98/15949	Non-provisional of	60/054,217	07/30/97
PCT/US98/15949	Non-provisional of	60/054,213	07/30/97
PCT/US98/15949	Non-provisional of	60/055,968	08/18/97
PCT/US98/15949	Non-provisional of	60/055,969	08/18/97
PCT/US98/15949	Non-provisional of	60/055,972	08/18/97
PCT/US98/15949	Non-provisional of	60/056,561	08/19/97
PCT/US98/15949	Non-provisional of	60/056,534	08/19/97
PCT/US98/15949	Non-provisional of	60/056,729	08/19/97
PCT/US98/15949	Non-provisional of	60/056,543	08/19/97
PCT/US98/15949	Non-provisional of	60/056,727	08/19/97

PCT/US98/15949	Non-provisional of	60/056,554	08/19/97
PCT/US98/15949	Non-provisional of	60/056,730	08/19/97
10/100,683	Continuation-in-part of	09/969,730	10/04/01
09/969,730	Continuation-in-part of	09/774,639	02/01/01
09/774,639	Continuation of	09/244,112	02/04/99
09/244,112	Continuation-in-part of	PCT/US98/16235	08/04/98
10/100,683	Continuation-in-part of	09/774,639	02/01/01
09/774,639	Continuation of	09/244,112	02/04/99
09/244,112	Continuation-in-part of	PCT/US98/16235	08/04/98
10/100,683	Continuation-in-part of	09/969,730	10/04/01
09/969,730	Non-provisional of	60/238,291	10/06/00
10/100,683	Continuation-in-part of	PCT/US98/16235	08/04/98
PCT/US98/16235	Non-provisional of	60/055,386	08/05/97
PCT/US98/16235	Non-provisional of	60/054,807	08/05/97
PCT/US98/16235	Non-provisional of	60/055,312	08/05/97
PCT/US98/16235	Non-provisional of	60/055,309	08/05/97
PCT/US98/16235	Non-provisional of	60/054,798	08/05/97
PCT/US98/16235	Non-provisional of	60/055,310	08/05/97
PCT/US98/16235	Non-provisional of	60/054,806	08/05/97
PCT/US98/16235	Non-provisional of	60/054,809	08/05/97
PCT/US98/16235	Non-provisional of	60/054,804	08/05/97
PCT/US98/16235	Non-provisional of	60/054,803	08/05/97
PCT/US98/16235	Non-provisional of	60/054,808	08/05/97
PCT/US98/16235	Non-provisional of	60/055,311	08/05/97
PCT/US98/16235	Non-provisional of	60/055,986	08/18/97
PCT/US98/16235	Non-provisional of	60/055,970	08/18/97
PCT/US98/16235	Non-provisional of	60/056,563	08/19/97
PCT/US98/16235	Non-provisional of	60/056,557	08/19/97
PCT/US98/16235	Non-provisional of	60/056,731	08/19/97
PCT/US98/16235	Non-provisional of	60/056,365	08/19/97
PCT/US98/16235	Non-provisional of	60/056,367	08/19/97
PCT/US98/16235	Non-provisional of	60/056,370	08/19/97
PCT/US98/16235	Non-provisional of	60/056,364	08/19/97
PCT/US98/16235	Non-provisional of	60/056,366	08/19/97
PCT/US98/16235	Non-provisional of	60/056,732	08/19/97
PCT/US98/16235	Non-provisional of	60/056,371	08/19/97
10/100,683	Continuation-in-part of	09/716,128	11/17/00
09/716,128	Continuation of	09/251,329	02/17/99
09/251,329	Continuation-in-part of	PCT/US98/17044	08/18/98
10/100,683	Continuation-in-part of	PCT/US98/17044	08/18/98
PCT/US98/17044	Non-provisional of	60/056,555	08/19/97
PCT/US98/17044	Non-provisional of	60/056,556	08/19/97
PCT/US98/17044	Non-provisional of	60/056,535	08/19/97
PCT/US98/17044	Non-provisional of	60/056,629	08/19/97
PCT/US98/17044	Non-provisional of	60/056,369	08/19/97
PCT/US98/17044	Non-provisional of	60/056,628	08/19/97
PCT/US98/17044	Non-provisional of	60/056,728	08/19/97
PCT/US98/17044	Non-provisional of	60/056,368	08/19/97
PCT/US98/17044	Non-provisional of	60/056,726	08/19/97
PCT/US98/17044	Non-provisional of	60/089,510	06/16/98

PCT/US98/17044	Non-provisional of	60/092,956	07/15/98
10/100,683	Continuation-in-part of	09/729,835	12/06/00
09/729,835	Divisional of	09/257,179	02/25/99
09/257,179	Continuation-in-part of	PCT/US98/17709	08/27/98
10/100,683	Continuation-in-part of	09/257,179	02/25/99
09/257,179	Continuation-in-part of	PCT/US98/17709	08/27/98
10/100,683	Continuation-in-part of	PCT/US98/17709	08/27/98
PCT/US98/17709	Non-provisional of	60/056,270	08/29/97
PCT/US98/17709	Non-provisional of	60/056,271	08/29/97
PCT/US98/17709	Non-provisional of	60/056,247	08/29/97
PCT/US98/17709	Non-provisional of	60/056,073	08/29/97
10/100,683	Continuation-in-part of	10/047,021	01/17/02
10/047,021	Continuation-in-part of	09/722,329	11/28/00
09/722,329	Continuation of	09/262,109	03/04/99
09/262,109	Continuation-in-part of	PCT/US98/18360	09/03/98
10/100,683	Continuation-in-part of	09/722,329	11/28/00
09/722,329	Continuation of	09/262,109	03/04/99
09/262,109	Continuation-in-part of	PCT/US98/18360	09/03/98
10/100,683	Continuation-in-part of	PZ016pct2	01/17/02
PZ016pct2	Non-provisional of	60/262,066	01/18/01
10/100,683	Continuation-in-part of	PCT/US98/18360	09/03/98
PCT/US98/18360	Non-provisional of	60/057,626	09/05/97
PCT/US98/18360	Non-provisional of	60/057,663	09/05/97
PCT/US98/18360	Non-provisional of	60/057,669	09/05/97
PCT/US98/18360	Non-provisional of	60/058,667	09/12/97
PCT/US98/18360	Non-provisional of	60/058,974	09/12/97
PCT/US98/18360	Non-provisional of	60/058,973	09/12/97
PCT/US98/18360	Non-provisional of	60/058,666	09/12/97
PCT/US98/18360	Non-provisional of	60/090,112	06/22/98
10/100,683	Continuation-in-part of	09/281,976	03/31/99
09/281,976	Continuation-in-part of	PCT/US98/20775	10/01/98
10/100,683	Continuation-in-part of	PCT/US98/20775	10/01/98
PCT/US98/20775	Non-provisional of	60/060,837	10/02/97
PCT/US98/20775	Non-provisional of	60/060,862	10/02/97
PCT/US98/20775	Non-provisional of	60/060,839	10/02/97
PCT/US98/20775	Non-provisional of	60/060,866	10/02/97
PCT/US98/20775	Non-provisional of	60/060,843	10/02/97
PCT/US98/20775	Non-provisional of	60/060,836	10/02/97
PCT/US98/20775	Non-provisional of	60/060,838	10/02/97
PCT/US98/20775	Non-provisional of	60/060,874	10/02/97
PCT/US98/20775	Non-provisional of	60/060,833	10/02/97
PCT/US98/20775	Non-provisional of	60/060,884	10/02/97
PCT/US98/20775	Non-provisional of	60/060,880	10/02/97
10/100,683	Continuation-in-part of	09/984,429	10/30/01
09/984,429	Non-provisional of	60/244,591	11/01/00
09/984,429	Continuation-in-part of	09/288,143	04/08/99

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09/288,143	Continuation-in-part of	PCT/US98/21142	10/08/98
10/100,683	Non-provisional of	60/244,591	11/01/00
10/100,683	Continuation-in-part of	09/288,143	04/08/99
09/288,143	Continuation-in-part of	PCT/US98/21142	10/08/98
10/100,683	Continuation-in-part of	PCT/US98/21142	10/08/98
PCT/US98/21142	Non-provisional of	60/061,463	10/09/97
PCT/US98/21142	Non-provisional of	60/061,529	10/09/97
PCT/US98/21142	Non-provisional of	60/071,498	10/09/97
PCT/US98/21142	Non-provisional of	60/061,527	10/09/97
PCT/US98/21142	Non-provisional of	60/061,536	10/09/97
PCT/US98/21142	Non-provisional of	60/061,532	10/09/97
10/100,683	Continuation-in-part of	09/296,622	04/23/99
09/296,622	Continuation-in-part of	PCT/US98/22376	10/23/98
10/100,683	Continuation-in-part of	PCT/US98/22376	10/23/98
PCT/US98/22376	Non-provisional of	60/063,099	10/24/97
PCT/US98/22376	Non-provisional of	60/063,088	10/24/97
PCT/US98/22376	Non-provisional of	60/063,100	10/24/97
PCT/US98/22376	Non-provisional of	60/063,387	10/24/97
PCT/US98/22376	Non-provisional of	60/063,148	10/24/97
PCT/US98/22376	Non-provisional of	60/063,386	10/24/97
PCT/US98/22376	Non-provisional of	60/062,784	10/24/97
PCT/US98/22376	Non-provisional of	60/063,091	10/24/97
PCT/US98/22376	Non-provisional of	60/063,090	10/24/97
PCT/US98/22376	Non-provisional of	60/063,089	10/24/97
PCT/US98/22376	Non-provisional of	60/063,092	10/24/97
PCT/US98/22376	Non-provisional of	60/063,111	10/24/97
PCT/US98/22376	Non-provisional of	60/063,101	10/24/97
PCT/US98/22376	Non-provisional of	60/063,109	10/24/97
PCT/US98/22376	Non-provisional of	60/063,110	10/24/97
PCT/US98/22376	Non-provisional of	60/063,098	10/24/97
PCT/US98/22376	Non-provisional of	60/063,097	10/24/97
10/100,683	Continuation-in-part of	09/974,879	10/12/01
09/974,879	Non-provisional of	60/239,893	10/13/00
09/974,879	Continuation-in-part of	09/818,683	03/28/01
09/818,683	Continuation of	09/305,736	05/05/99
09/305,736	Continuation-in-part of	PCT/US98/23435	11/04/98
10/100,683	Continuation-in-part of	09/818,683	03/28/01
09/818,683	Continuation of	09/305,736	05/05/99
09/305,736	Continuation-in-part of	PCT/US98/23435	11/04/98
10/100,683	Continuation-in-part of	09/305,736	05/05/99
09/305,736	Continuation-in-part of	PCT/US98/23435	11/04/98
10/100,683	Continuation-in-part of	PCT/US98/23435	11/04/98
PCT/US98/23435	Non-provisional of	60/064,911	11/07/97
PCT/US98/23435	Non-provisional of	60/064,912	11/07/97
PCT/US98/23435	Non-provisional of	60/064,983	11/07/97
PCT/US98/23435	Non-provisional of	60/064,900	11/07/97
PCT/US98/23435	Non-provisional of	60/064,988	11/07/97

PCT/US98/23435	Non-provisional of	60/064,987	11/07/97
PCT/US98/23435	Non-provisional of	60/064,908	11/07/97
PCT/US98/23435	Non-provisional of	60/064,984	11/07/97
PCT/US98/23435	Non-provisional of	60/064,985	11/07/97
PCT/US98/23435	Non-provisional of	60/066,094	11/17/97
PCT/US98/23435	Non-provisional of	60/066,100	11/17/97
PCT/US98/23435	Non-provisional of	60/066,089	11/17/97
PCT/US98/23435	Non-provisional of	60/066,095	11/17/97
PCT/US98/23435	Non-provisional of	60/066,090	11/17/97
10/100,683	Continuation-in-part of	09/334,595	06/17/99
09/334,595	Continuation-in-part of	PCT/US98/27059	12/17/98
10/100,683	Continuation-in-part of	PCT/US98/27059	12/17/98
PCT/US98/27059	Non-provisional of	60/070,923	12/18/97
PCT/US98/27059	Non-provisional of	60/068,007	12/18/97
PCT/US98/27059	Non-provisional of	60/068,057	12/18/97
PCT/US98/27059	Non-provisional of	60/068,006	12/18/97
PCT/US98/27059	Non-provisional of	60/068,369	12/19/97
PCT/US98/27059	Non-provisional of	60/068,367	12/19/97
PCT/US98/27059	Non-provisional of	60/068,368	12/19/97
PCT/US98/27059	Non-provisional of	60/068,169	12/19/97
PCT/US98/27059	Non-provisional of	60/068,053	12/18/97
PCT/US98/27059	Non-provisional of	60/068,064	12/18/97
PCT/US98/27059	Non-provisional of	60/068,054	12/18/97
PCT/US98/27059	Non-provisional of	60/068,008	12/18/97
PCT/US98/27059	Non-provisional of	60/068,365	12/19/97
10/100,683	Continuation-in-part of	09/938,671	08/27/01
09/938,671	Continuation of	09/739,907	12/20/00
09/739,907	Continuation of	09/348,457	07/07/99
09/348,457	Continuation-in-part of	PCT/US99/00108	01/06/99
10/100,683	Continuation-in-part of	09/739,907	12/20/00
09/739,907	Continuation of	09/348,457	07/07/99
09/348,457	Continuation-in-part of	PCT/US99/00108	01/06/99
10/100,683	Continuation-in-part of	09/348,457	07/07/99
09/348,457	Continuation-in-part of	PCT/US99/00108	01/06/99
10/100,683	Continuation-in-part of	PCT/US99/00108	01/06/99
PCT/US99/00108	Non-provisional of	60/070,704	01/07/98
PCT/US99/00108	Non-provisional of	60/070,658	01/07/98
PCT/US99/00108	Non-provisional of	60/070,692	01/07/98
PCT/US99/00108	Non-provisional of	60/070,657	01/07/98
10/100,683	Continuation-in-part of	09/949,925	09/12/01
09/949,925	Non-provisional of	60/232,150	09/12/00
09/949,925	Continuation-in-part of	PCT/US99/01621	01/27/99
09/949,925	Continuation-in-part of	09/363,044	07/29/99
09/363,044	Continuation-in-part of	PCT/US99/01621	01/27/99
10/100,683	Continuation-in-part of	09/813,153	03/21/01
09/813,153	Continuation of	09/363,044	07/29/99

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09/363,044	Continuation-in-part of	PCT/US99/01621	01/27/99
10/100,683	Continuation-in-part of	09/363,044	07/29/99
09/363,044	Continuation-in-part of	PCT/US99/01621	01/27/99
10/100,683	Continuation-in-part of	PCT/US99/01621	01/27/99
PCT/US99/01621	Non-provisional of	60/073,170	01/30/98
PCT/US99/01621	Non-provisional of	60/073,167	01/30/98
PCT/US99/01621	Non-provisional of	60/073,165	01/30/98
PCT/US99/01621	Non-provisional of	60/073,164	01/30/98
PCT/US99/01621	Non-provisional of	60/073,162	01/30/98
PCT/US99/01621	Non-provisional of	60/073,161	01/30/98
PCT/US99/01621	Non-provisional of	60/073,160	01/30/98
PCT/US99/01621	Non-provisional of	60/073,159	01/30/98
10/100,683	Continuation-in-part of	10/062,548	02/05/02
10/062,548	Continuation of	09/369,247	08/05/99
09/369,247	Continuation-in-part of	PCT/US99/02293	02/04/99
10/100,683	Continuation-in-part of	09/369,247	08/05/99
09/369,247	Continuation-in-part of	PCT/US99/02293	02/04/99
10/100,683	Continuation-in-part of	PCT/US99/02293	02/04/99
PCT/US99/02293	Non-provisional of	60/074,118	02/09/98
PCT/US99/02293	Non-provisional of	60/074,157	02/09/98
PCT/US99/02293	Non-provisional of	60/074,037	02/09/98
PCT/US99/02293	Non-provisional of	60/074,141	02/09/98
PCT/US99/02293	Non-provisional of	60/074,341	02/09/98
10/100,683	Continuation-in-part of	09/716,129	11/17/00
09/716,129	Continuation-in-part of	PCT/US99/03939	02/24/99
09/716,129	CON	09/382,572	08/25/99
09/382,572	Continuation-in-part of	PCT/US99/03939	02/24/99
10/100,683	Continuation-in-part of	PCT/US99/03939	02/24/99
PCT/US99/03939	Non-provisional of	60/076,053	02/26/98
PCT/US99/03939	Non-provisional of	60/076,051	02/26/98
PCT/US99/03939	Non-provisional of	60/076,054	02/26/98
PCT/US99/03939	Non-provisional of	60/076,052	02/26/98
PCT/US99/03939	Non-provisional of	60/076,057	02/26/98
10/100,683	Continuation-in-part of	09/798,889	03/06/01
09/798,889	CON	09/393,022	09/09/99
09/393,022	Continuation-in-part of	PCT/US99/05721	03/11/99
10/100,683	Continuation-in-part of	PCT/US99/05721	03/11/99
PCT/US99/05721	Non-provisional of	60/077,714	03/12/98
PCT/US99/05721	Non-provisional of	60/077,686	03/12/98
PCT/US99/05721	Non-provisional of	60/077,687	03/12/98
PCT/US99/05721	Non-provisional of	60/077,696	03/12/98
10/100,683	Continuation-in-part of	09/397,945	09/17/99
09/397,945	Continuation-in-part of	PCT/US99/05804	03/18/99
10/100,683	Continuation-in-part of	PCT/US99/05804	03/18/99
PCT/US99/05804	Non-provisional of	60/078,566	03/19/98
PCT/US99/05804	Non-provisional of	60/078,576	03/19/98
PCT/US99/05804	Non-provisional of	60/078,573	03/19/98

PCT/US99/05804	Non-provisional of	60/078,574	03/19/98
PCT/US99/05804	Non-provisional of	60/078,579	03/19/98
PCT/US99/05804	Non-provisional of	60/080,314	04/01/98
PCT/US99/05804	Non-provisional of	60/080,312	04/01/98
PCT/US99/05804	Non-provisional of	60/078,578	03/19/98
PCT/US99/05804	Non-provisional of	60/078,581	03/19/98
PCT/US99/05804	Non-provisional of	60/078,577	03/19/98
PCT/US99/05804	Non-provisional of	60/078,563	03/19/98
PCT/US99/05804	Non-provisional of	60/080,313	04/01/98
10/100,683	Continuation-in-part of	09/948,783	09/10/01
09/948,783	Non-provisional of	60/231,846	09/11/00
09/948,783	Continuation-in-part of	09/892,877	06/28/01
09/892,877	Continuation of	09/437,658	11/10/99
09/437,658	Continuation-in-part of	PCT/US99/09847	05/06/99
10/100,683	Continuation-in-part of	09/892,877	06/28/01
09/892,877	Continuation of	09/437,658	11/10/99
09/437,658	Continuation-in-part of	PCT/US99/09847	05/06/99
10/100,683	Continuation-in-part of	PCT/US99/09847	05/06/99
PCT/US99/09847	Non-provisional of	60/085,093	05/12/98
PCT/US99/09847	Non-provisional of	60/085,094	05/12/98
PCT/US99/09847	Non-provisional of	60/085,105	05/12/98
PCT/US99/09847	Non-provisional of	60/085,180	05/12/98
PCT/US99/09847	Non-provisional of	60/085,927	05/18/98
PCT/US99/09847	Non-provisional of	60/085,906	05/18/98
PCT/US99/09847	Non-provisional of	60/085,920	05/18/98
PCT/US99/09847	Non-provisional of	60/085,924	05/18/98
PCT/US99/09847	Non-provisional of	60/085,922	05/18/98
PCT/US99/09847	Non-provisional of	60/085,923	05/18/98
PCT/US99/09847	Non-provisional of	60/085,921	05/18/98
PCT/US99/09847	Non-provisional of	60/085,925	05/18/98
PCT/US99/09847	Non-provisional of	60/085,928	05/18/98
10/100,683	Continuation-in-part of	10/050,873	01/18/02
10/050,873	Non-provisional of	60/263,681	01/24/01
10/050,873	Non-provisional of	60/263,230	01/23/01
10/050,873	Continuation-in-part of	09/461,325	12/14/99
09/461,325	Continuation-in-part of	PCT/US99/13418	06/15/99
10/100,683	Continuation-in-part of	10/012,542	12/12/01
10/012,542	Divisional of	09/461,325	12/14/99
09/461,325	Continuation-in-part of	PCT/US99/13418	06/15/99
10/100,683	Continuation-in-part of	09/461,325	12/14/99
09/461,325	Continuation-in-part of	PCT/US99/13418	06/15/99
10/100,683	Continuation-in-part of	PCT/US99/13418	06/15/99
PCT/US99/13418	Non-provisional of	60/089,507	06/16/98
PCT/US99/13418	Non-provisional of	60/089,508	06/16/98
PCT/US99/13418	Non-provisional of	60/089,509	06/16/98

PCT/US99/13418	Non-provisional of	60/089,510	06/16/98
PCT/US99/13418	Non-provisional of	60/090,112	06/22/98
PCT/US99/13418	Non-provisional of	60/090,113	06/22/98
10/100,683	Continuation-in-part of	09/984,271	10/29/01
09/984,271	Divisional of	09/482,273	01/13/00
09/482,273	Continuation-in-part of	PCT/US99/15849	07/14/99
10/100,683	Continuation-in-part of	09/984,276	10/29/01
09/984,276	Divisional of	09/482,273	01/13/00
09/482,273	Continuation-in-part of	PCT/US99/15849	07/14/99
10/100,683	Continuation-in-part of	09/482,273	01/13/00
09/482,273	Continuation-in-part of	PCT/US99/15849	07/14/99
10/100,683	Continuation-in-part of	PCT/US99/15849	07/14/99
PCT/US99/15849	Non-provisional of	60/092,921	07/15/98
PCT/US99/15849	Non-provisional of	60/092,922	07/15/98
PCT/US99/15849	Non-provisional of	60/092,956	07/15/98
10/100,683	Continuation-in-part of	PCT/US01/29871	09/24/01
PCT/US01/29871	Non-provisional of	60/234,925	09/25/00
PCT/US01/29871	Continuation-in-part of	PCT/US01/00911	01/12/01
10/100,683	Continuation-in-part of	PCT/US01/00911	01/12/01
PCT/US01/00911	Continuation-in-part of	09/482,273	01/13/00
10/100,683	Non-provisional of	60/350,898	01/25/02
10/100,683	Continuation-in-part of	09/489,847	01/24/00
09/489,847	Continuation-in-part of	PCT/US99/17130	07/29/99
10/100,683	Continuation-in-part of	PCT/US99/17130	07/29/99
PCT/US99/17130	Non-provisional of	60/094,657	07/30/98
PCT/US99/17130	Non-provisional of	60/095,486	08/05/98
PCT/US99/17130	Non-provisional of	60/096,319	08/12/98
PCT/US99/17130	Non-provisional of	60/095,454	08/06/98
PCT/US99/17130	Non-provisional of	60/095,455	08/06/98
10/100,683	Continuation-in-part of	10/054,988	01/25/02
10/054,988	Continuation of	09/904,615	07/16/01
09/904,615	Continuation of	09/739,254	12/19/00
09/739,254	Continuation of	09/511,554	02/23/00
09/511,554	Continuation-in-part of	PCT/US99/19330	08/24/99
10/100,683	Continuation-in-part of	09/904,615	07/16/01
09/904,615	Continuation of	09/739,254	12/19/00
09/739,254	Continuation of	09/511,554	02/23/00
09/511,554	Continuation-in-part of	PCT/US99/19330	08/24/99
10/100,683	Continuation-in-part of	PCT/US99/19330	08/24/99
PCT/US99/19330	Non-provisional of	60/097,917	08/25/98
PCT/US99/19330	Non-provisional of	60/098,634	08/31/98
10/100,683	Continuation-in-part of	09/820,893	03/30/01
09/820,893	Continuation of	09/531,119	03/20/00
09/531,119	Continuation-in-part of	PCT/US99/22012	09/22/99
10/100,683	Continuation-in-part of	PCT/US99/22012	09/22/99
PCT/US99/22012	Non-provisional of	60/101,546	09/23/98
PCT/US99/22012	Non-provisional of	60/102,895	10/02/98
10/100,683	Continuation-in-part of	09/948,820	09/10/01
09/948,820	Continuation of	09/565,391	05/05/00

09/565,391	Continuation-in-part of	PCT/US99/26409	11/09/99
10/100,683	Continuation-in-part of	09/565,391	05/05/00
09/565,391	Continuation-in-part of	PCT/US99/26409	11/09/99
10/100,683	Continuation-in-part of	PCT/US99/26409	11/09/99
PCT/US99/26409	Non-provisional of	60/108,207	11/12/98
10/100,683	Continuation-in-part of	09/895,298	07/02/01
09/895,298	Continuation of	09/591,316	06/09/00
09/591,316	Continuation-in-part of	PCT/US99/29950	12/16/99
10/100,683	Continuation-in-part of	PCT/US99/29950	12/16/99
PCT/US99/29950	Non-provisional of	60/113,006	12/18/98
PCT/US99/29950	Non-provisional of	60/112,809	12/17/98
10/100,683	Continuation-in-part of	09/985,153	11/01/01
09/985,153	Continuation of	09/618,150	07/17/00
09/618,150	Continuation-in-part of	PCT/US00/00903	01/18/00
10/100,683	Continuation-in-part of	PCT/US00/00903	01/18/00
PCT/US00/00903	Non-provisional of	60/116,330	01/19/99
10/100,683	Continuation-in-part of	09/997,131	11/30/01
09/997,131	Continuation of	09/628,508	07/28/00
09/628,508	Continuation-in-part of	PCT/US00/03062	02/08/00
10/100,683	Continuation-in-part of	PCT/US00/03062	02/08/00
PCT/US00/03062	Non-provisional of	60/119,468	02/10/99
10/100,683	Continuation-in-part of	10/050,882	01/18/02
10/050,882	Continuation of	09/661,453	09/13/00
09/661,453	Continuation-in-part of	PCT/US00/06783	03/16/00
10/100,683	Continuation-in-part of	09/661,453	09/13/00
09/661,453	Continuation-in-part of	PCT/US00/06783	03/16/00
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PCT/US00/06783	Non-provisional of	60/125,055	03/18/99
10/100,683	Continuation-in-part of	10/050,704	01/18/02
10/050,704	Continuation of	09/684,524	10/10/00
09/684,524	Continuation-in-part of	PCT/US00/08979	04/06/00
10/100,683	Continuation-in-part of	09/684,524	10/10/00
09/684,524	Continuation-in-part of	PCT/US00/08979	04/06/00
10/100,683	Continuation-in-part of	PCT/US00/08979	04/06/00
PCT/US00/08979	Non-provisional of	60/128,693	04/09/99
PCT/US00/08979	Non-provisional of	60/130,991	04/26/99
10/100,683	Continuation-in-part of	10/042,141	01/11/02
10/042,141	Continuation of	09/726,643	12/01/00
09/726,643	Continuation-in-part of	PCT/US00/15187	06/02/00
10/100,683	Continuation-in-part of	09/726,643	12/01/00
09/726,643	Continuation-in-part of	PCT/US00/15187	06/02/00
10/100,683	Continuation-in-part of	PCT/US00/15187	06/02/00
PCT/US00/15187	Non-provisional of	60/137,725	06/07/99
10/100,683	Continuation-in-part of	09/756,168	01/09/01
09/756,168	Continuation-in-part of	PCT/US00/19735	07/23/99
10/100,683	Continuation-in-part of	PCT/US00/19735	07/20/00
PCT/US00/19735	Non-provisional of	60/145,220	07/23/99
10/100,683	Continuation-in-part of	PZ042P1C1	02/01/02

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PZ042P1C1	Continuation of	09/781,417	02/13/01
09/781,417	Continuation-in-part of	PCT/US00/22325	08/16/00
10/100,683	Continuation-in-part of	09/781,417	02/13/01
09/781,417	Continuation-in-part of	PCT/US00/22325	08/16/00
10/100,683	Continuation-in-part of	PCT/US00/22325	08/16/00
PCT/US00/22325	Non-provisional of	60/149,182	08/17/99
10/100,683	Continuation-in-part of	09/789,561	02/22/01
09/789,561	Continuation-in-part of	PCT/US00/24008	08/31/00
10/100,683	Continuation-in-part of	PCT/US00/24008	08/31/00
PCT/US00/24008	Non-provisional of	60/152,315	09/03/99
PCT/US00/24008	Non-provisional of	60/152,317	09/03/99
10/100,683	Continuation-in-part of	09/800,729	03/08/01
09/800,729	Continuation-in-part of	PCT/US00/26013	09/22/00
10/100,683	Continuation-in-part of	PCT/US00/26013	09/22/00
PCT/US00/26013	Non-provisional of	60/155,709	09/24/99
10/100,683	Continuation-in-part of	09/832,129	04/11/01
09/832,129	Continuation-in-part of	PCT/US00/28664	10/17/00
10/100,683	Continuation-in-part of	PCT/US00/28664	10/17/00
PCT/US00/28664	Non-provisional of	60/163,085	11/02/99
PCT/US00/28664	Non-provisional of	60/172,411	12/17/99
10/100,683	Continuation-in-part of	PCT/US00/29363	10/25/00
PCT/US00/29363	Non-provisional of	60/215,139	06/30/00
PCT/US00/29363	Non-provisional of	60/162,239	10/29/99
10/100,683	Continuation-in-part of	PCT/US00/29360	10/25/00
PCT/US00/29360	Non-provisional of	60/215,138	06/30/00
PCT/US00/29360	Non-provisional of	60/162,211	10/29/99
10/100,683	Continuation-in-part of	PCT/US00/29362	10/25/00
PCT/US00/29362	Non-provisional of	60/215,131	06/30/00
PCT/US00/29362	Non-provisional of	60/162,240	10/29/99
10/100,683	Continuation-in-part of	PCT/US00/29365	10/25/00
PCT/US00/29365	Non-provisional of	60/219,666	07/21/00
PCT/US00/29365	Non-provisional of	60/162,237	10/29/99
10/100,683	Continuation-in-part of	PCT/US00/29364	10/25/00
PCT/US00/29364	Non-provisional of	60/215,134	06/30/00
PCT/US00/29364	Non-provisional of	60/162,238	10/29/99
10/100,683	Continuation-in-part of	PCT/US00/30040	11/01/00
PCT/US00/30040	Non-provisional of	60/215,130	06/30/00
PCT/US00/30040	Non-provisional of	60/163,580	11/05/99
10/100,683	Continuation-in-part of	PCT/US00/30037	11/01/00
PCT/US00/30037	Non-provisional of	60/215,137	06/30/00
PCT/US00/30037	Non-provisional of	60/163,577	11/05/99
10/100,683	Continuation-in-part of	PCT/US00/30045	11/01/00
PCT/US00/30045	Non-provisional of	60/215,133	06/30/00
PCT/US00/30045	Non-provisional of	60/163,581	11/05/99
10/100,683	Continuation-in-part of	PCT/US00/30036	11/01/00
PCT/US00/30036	Non-provisional of	60/221,366	07/27/00
PCT/US00/30036	Non-provisional of	60/163,576	11/05/99
10/100,683	Continuation-in-part of	PCT/US00/30039	11/01/00
PCT/US00/30039	Non-provisional of	60/221,367	07/27/00
PCT/US00/30039	Non-provisional of	60/195,296	04/07/00

PCT/US00/30039	Non-provisional of	60/164,344	11/09/99
10/100,683	Continuation-in-part of	PCT/US00/30654	11/08/00
PCT/US00/30654	Non-provisional of	60/221,142	07/27/00
PCT/US00/30654	Non-provisional of	60/164,835	11/12/99
10/100,683	Continuation-in-part of	PCT/US00/30628	11/08/00
PCT/US00/30628	Non-provisional of	60/215,140	06/30/00
PCT/US00/30628	Non-provisional of	60/164,744	11/12/99
10/100,683	Continuation-in-part of	PCT/US00/30653	11/08/00
PCT/US00/30653	Non-provisional of	60/221,193	07/27/00
PCT/US00/30653	Non-provisional of	60/164,735	11/12/99
10/100,683	Continuation-in-part of	PCT/US00/30629	11/08/00
PCT/US00/30629	Non-provisional of	60/222,904	08/03/00
PCT/US00/30629	Non-provisional of	60/164,825	11/12/99
10/100,683	Continuation-in-part of	PCT/US00/30679	11/08/00
PCT/US00/30679	Non-provisional of	60/224,007	08/04/00
PCT/US00/30679	Non-provisional of	60/164,834	11/12/99
10/100,683	Continuation-in-part of	PCT/US00/30674	11/08/00
PCT/US00/30674	Non-provisional of	60/215,128	06/30/00
PCT/US00/30674	Non-provisional of	60/164,750	11/12/99
10/100,683	Continuation-in-part of	PCT/US00/31162	11/15/00
60/215,136	Non-provisional of	60/215,136	06/30/00
60/215,136	Non-provisional of	60/166,415	11/19/99
10/100,683	Continuation-in-part of	PCT/US00/31282	11/15/00
PCT/US00/31282	Non-provisional of	60/219,665	07/21/00
PCT/US00/31282	Non-provisional of	60/166,414	11/19/99
10/100,683	Continuation-in-part of	PCT/US00/30657	11/08/00
PCT/US00/30657	Non-provisional of	60/215,132	06/30/00
PCT/US00/30657	Non-provisional of	60/164,731	11/12/99
10/100,683	Continuation-in-part of	PCT/US01/01396	01/17/01
60/256,968	Non-provisional of	60/256,968	12/21/00
60/256,968	Non-provisional of	60/226,280	08/18/00
10/100,683	Continuation-in-part of	PCT/US01/01387	01/17/01
60/259,803	Non-provisional of	60/259,803	01/05/01
60/259,803	Non-provisional of	60/226,380	08/18/00
10/100,683	Continuation-in-part of	PCT/US01/01567	01/17/01
PCT/US01/01567	Non-provisional of	60/228,084	08/28/00
10/100,683	Continuation-in-part of	PCT/US01/01431	01/17/01
PCT/US01/01431	Non-provisional of	60/231,968	09/12/00
PCT/US01/01431	Continuation-in-part of	09/915,582	07/27/01
10/100,683	Continuation-in-part of	PCT/US01/01432	01/17/01
PCT/US01/01432	Non-provisional of	60/236,326	09/29/00
10/100,683	Continuation-in-part of	PCT/US01/00544	01/09/01
PCT/US01/00544	Non-provisional of	60/234,211	09/20/00
10/100,683	Continuation-in-part of	PCT/US01/01435	01/17/01
PCT/US01/01435	Non-provisional of	60/226,282	08/18/00
10/100,683	Continuation-in-part of	PCT/US01/01386	01/17/01
PCT/US01/01386	Non-provisional of	60/232,104	09/12/00
10/100,683	Continuation-in-part of	PCT/US01/01565	01/17/01
PCT/US01/01565	Non-provisional of	60/234,210	09/20/00
10/100,683	Continuation-in-part of	PCT/US01/01394	01/17/01

PCT/US01/01394	Non-provisional of	60/259,805	01/05/01
PCT/US01/01394	Non-provisional of	60/226,278	08/18/00
10/100,683	Continuation-in-part of	PCT/US01/01434	01/17/01
PCT/US01/01434	Non-provisional of	60/259,678	01/05/01
PCT/US01/01434	Non-provisional of	60/226,279	08/18/00
10/100,683	Continuation-in-part of	PCT/US01/01397	01/17/01
PCT/US01/01397	Non-provisional of	60/226,281	08/18/00
10/100,683	Continuation-in-part of	PCT/US01/01385	01/17/01
PCT/US01/01385	Non-provisional of	60/231,969	09/12/00
10/100,683	Continuation-in-part of	PCT/US01/01384	01/17/01
PCT/US01/01384	Non-provisional of	60/259,516	01/04/01
PCT/US01/01384	Non-provisional of	60/228,086	08/28/00
10/100,683	Continuation-in-part of	PCT/US01/01383	01/17/01
PCT/US01/01383	Non-provisional of	60/259,804	01/05/01
PCT/US01/01383	Non-provisional of	60/228,083	08/28/00
10/100,683	Continuation-in-part of	PCT/US02/05064	02/21/02
PCT/US02/05064	Non-provisional of	60/304,444	07/12/01
PCT/US02/05064	Non-provisional of	60/270,658	02/23/01
10/100,683	Continuation-in-part of	PCT/US02/05301	02/21/02
PCT/US02/05301	Non-provisional of	60/304,417	07/12/01
PCT/US02/05301	Non-provisional of	60/270,625	02/23/01
10/100,683	Non-provisional of	60/304,121	07/11/01
10/100,683	Non-provisional of	60/295,869	06/06/01
10/100,683	Non-provisional of	60/325,209	09/28/01
10/100,683	Non-provisional of	60/311,085	08/10/01
10/100,683	Non-provisional of	60/330,629	10/26/01
10/100,683	Non-provisional of	60/331,046	11/07/01
10/100,683	Non-provisional of	60/358,554	02/22/02
10/100,683	Non-provisional of	60/358,714	02/25/02

; wherein each of the above applications are all herein incorporated by reference in their entirety.

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Field of the Invention

10   The present invention relates to human secreted proteins/polypeptides, and isolated nucleic acid molecules encoding said proteins/polypeptides, useful for detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating cardiovascular diseases, disorders, and/or conditions related thereto. Antibodies that bind these polypeptides are also encompassed by the present invention. Also encompassed by the invention are vectors, host cells, and recombinant and synthetic methods for producing said polynucleotides, polypeptides, and/or antibodies. The

15   invention further encompasses screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The present invention further encompasses methods and compositions for inhibiting or enhancing the production and function of the

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polypeptides of the present invention.

Background of the Invention

The cardiovascular system is a component of a complex physiological network involved in maintaining the oxygen and nutrient supply to tissues of the body.

The heart is the anatomical and functional centerpiece of the cardiovascular system. Weighing only 250-350 grams (less than a pound), the heart is one of our strongest and hardest working organs. It is composed of innervated muscle tissue with unique properties; e.g., it can pace itself in contraction. The main center of rhythm regulation is the sinoatrial (SA) node. Certain cardiac cells repeatedly fire impulses that trigger heart contractions. These autorhythmic cells have two important functions. One is to act as a pacemaker (set the pace for the entire heart), and the other is to form a conduction system, the route for conducting impulses throughout the heart muscle. This conduction system controls the pattern of blood flow through the heart.

The heart pumps at least five quarts of blood through a full circuit of the body every minute. The heart consists of two pumps, side by side. The pump on the right side moves blood to the lungs, where waste gases, such as carbon dioxide, are removed and oxygen is added. Freshly oxygenated blood returns to the pump on the left side, which moves it out into the rest of the body.

Blood flows away from the heart to the lungs or to the rest of your body, though blood vessels called arteries. Arteries branch extensively, each branch become smaller, forming blood vessels called arterioles. Arterioles also become repeatedly smaller and smaller until they are tiny vessels called capillaries. Throughout the arteries and smaller vessels that stem from them, the blood delivers nutrients and oxygen to the tissues and picks up waste. This task is completed in the capillaries. As the blood moves on through the capillaries the blood vessels gradually become larger, eventually becoming veins. Veins ultimately carry blood back to the heart. The cycle then begins again.

Disorders of the cardiovascular system are many and varied, killing more Americans each year than any other category of disorders. For example, damage to the conduction system leads to arrhythmia, an irregular beating of the heart. If left untreated, the heart becomes unable to effectively pump blood, frequently leading to permanent heart damage and/or cardiac arrest.

One of the most prevalent conditions in industrialized countries today is atherosclerosis. Atherosclerosis is the buildup of fatty deposits in the intima of large and medium-sized arteries. The buildup of deposits narrowing of the arteries, reducing or potentially blocking the ability of blood to flow through the arteries. Untreated, atherosclerosis typically results in cardiac arrest and, frequently, death.

Clearly, the discovery of new human cardiovascular-associated polynucleotides, the polypeptides encoded by them, and antibodies that immunospecifically bind these polypeptides,

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satisfies a need in the art by providing new compositions which are useful in the diagnosis, treatment, prevention and/or prognosis of caridovascular disorders.

Cardiovascular disorders include, but are not limited to, stroke, cardiovascular abnormalities, such as arterio-arterial fistula, arteriovenous fistula, cerebral arteriovenous malformations, congenital heart defects, pulmonary atresia, and Scimitar Syndrome. Congenital heart defects include, but are not limited to, aortic coarctation, cor triatriatum, coronary vessel anomalies, crisscross heart, dextrocardia, patent ductus arteriosus, Ebstein's anomaly, Eisenmenger complex, hypoplastic left heart syndrome, levocardia, tetralogy of fallot, transposition of great vessels, double outlet right ventricle, tricuspid atresia, persistent truncus arteriosus, and heart septal defects, such as aortopulmonary septal defect, endocardial cushion defects, Lutembacher's Syndrome, trilogy of Fallot, ventricular heart septal defects.

Cardiovascular disorders also include, but are not limited to, heart disease, such as arrhythmias, carcinoid heart disease, high cardiac output, low cardiac output, cardiac tamponade, endocarditis (including bacterial), heart aneurysm, cardiac arrest, congestive heart failure, congestive cardiomyopathy, paroxysmal dyspnea, cardiac edema, heart hypertrophy, congestive cardiomyopathy, left ventricular hypertrophy, right ventricular hypertrophy, post-infarction heart rupture, ventricular septal rupture, heart valve diseases, myocardial diseases, myocardial ischemia, pericardial effusion, pericarditis (including constrictive and tuberculous), pneumopericardium, postpericardiotomy syndrome, pulmonary heart disease, rheumatic heart disease, ventricular dysfunction, hyperemia, cardiovascular pregnancy complications, Scimitar Syndrome, cardiovascular syphilis, and cardiovascular tuberculosis.

Arrhythmias include, but are not limited to, sinus arrhythmia, atrial fibrillation, atrial flutter, bradycardia, extrasystole, Adams-Stokes Syndrome, bundle-branch block, sinoatrial block, long QT syndrome, parasystole, Lown-Ganong-Levine Syndrome, Mahaim-type pre-excitation syndrome, Wolff-Parkinson-White syndrome, sick sinus syndrome, tachycardias, and ventricular fibrillation. Tachycardias include paroxysmal tachycardia, supraventricular tachycardia, accelerated idioventricular rhythm, atrioventricular nodal reentry tachycardia, ectopic atrial tachycardia, ectopic junctional tachycardia, sinoatrial nodal reentry tachycardia, sinus tachycardia, Torsades de Pointes, and ventricular tachycardia.

Heart valve diseases include, but are not limited to, aortic valve insufficiency, aortic valve stenosis, hear murmurs, aortic valve prolapse, mitral valve prolapse, tricuspid valve prolapse, mitral valve insufficiency, mitral valve stenosis, pulmonary atresia, pulmonary valve insufficiency, pulmonary valve stenosis, tricuspid atresia, tricuspid valve insufficiency, and tricuspid valve stenosis.

Myocardial diseases include, but are not limited to, alcoholic cardiomyopathy, congestive cardiomyopathy, hypertrophic cardiomyopathy, aortic subvalvular stenosis, pulmonary subvalvular stenosis, restrictive cardiomyopathy, Chagas cardiomyopathy, endocardial

fibroelastosis, endomyocardial fibrosis, Kearns Syndrome, myocardial reperfusion injury, and myocarditis.

Myocardial ischemias include, but are not limited to, coronary disease, such as angina pectoris, coronary aneurysm, coronary arteriosclerosis, coronary thrombosis, coronary vasospasm, myocardial infarction and myocardial stunning.

Cardiovascular diseases also include vascular diseases such as aneurysms, angiodysplasia, angiomatosis, bacillary angiomatosis, Hippel-Lindau Disease, Klippel-Trenaunay-Weber Syndrome, Sturge-Weber Syndrome, angioneurotic edema, aortic diseases, Takayasu's Arteritis, aortitis, Leriche's Syndrome, arterial occlusive diseases, arteritis, enarteritis, polyarteritis nodosa, cerebrovascular disorders, diabetic angiopathies, diabetic retinopathy, embolisms, thrombosis, erythromelalgia, hemorrhoids, hepatic veno-occlusive disease, hypertension, hypotension, ischemia, peripheral vascular diseases, phlebitis, pulmonary veno-occlusive disease, Raynaud's disease, CREST syndrome, retinal vein occlusion, Scimitar syndrome, superior vena cava syndrome, telangiectasia, atacia telangiectasia, hereditary hemorrhagic telangiectasia, varicocele, varicose veins, varicose ulcer, vasculitis, and venous insufficiency.

Aneurysms include, but are not limited to, dissecting aneurysms, false aneurysms, infected aneurysms, ruptured aneurysms, aortic aneurysms, cerebral aneurysms, coronary aneurysms, heart aneurysms, and iliac aneurysms.

Arterial occlusive diseases include, but are not limited to, arteriosclerosis, intermittent claudication, carotid stenosis, fibromuscular dysplasias, mesenteric vascular occlusion, Moyamoya disease, renal artery obstruction, retinal artery occlusion, and thromboangiitis obliterans.

Cerebrovascular disorders include, but are not limited to, carotid artery diseases, cerebral amyloid angiopathy, cerebral aneurysm, cerebral anoxia, cerebral arteriosclerosis, cerebral arteriovenous malformation, cerebral artery diseases, cerebral embolism and thrombosis, carotid artery thrombosis, sinus thrombosis, Wallenberg's syndrome, cerebral hemorrhage, epidural hematoma, subdural hematoma, subaraxhnoid hemorrhage, cerebral infarction, cerebral ischemia (including transient), subclavian steal syndrome, periventricular leukomalacia, vascular headache, cluster headache, migraine, and vertebrobasilar insufficiency.

Embolisms include, but are not limited to, air embolisms, amniotic fluid embolisms, cholesterol embolisms, blue toe syndrome, fat embolisms, pulmonary embolisms, and thromoboembolisms. Thrombosis include, but are not limited to, coronary thrombosis, hepatic vein thrombosis, retinal vein occlusion, carotid artery thrombosis, sinus thrombosis, Wallenberg's syndrome, and thrombophlebitis.

Ischemic disorders include, but are not limited to, cerebral ischemia, ischemic colitis, compartment syndromes, anterior compartment syndrome, myocardial ischemia, reperfusion injuries, and peripheral limb ischemia. Vasculitis includes, but is not limited to, aortitis, arteritis, Behcet's Syndrome, Churg-Strauss Syndrome, mucocutaneous lymph node syndrome,

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thromboangiitis obliterans, hypersensitivity vasculitis, Schoenlein-Henoch purpura, allergic cutaneous vasculitis, and Wegener's granulomatosis.

Summary of the Invention

5   The present invention encompasses human secreted proteins/polypeptides, and isolated nucleic acid molecules encoding said proteins/polypeptides, useful for detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating cardiovascular diseases and disorders. Antibodies that bind these polypeptides are also encompassed by the present invention; as are vectors, host cells, and recombinant and synthetic methods for producing said polynucleotides,

10   polypeptides, and/or antibodies.   The invention further encompasses screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention.   The present invention also encompasses methods and compositions for inhibiting or enhancing the production and function of the polypeptides of the present invention.

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Detailed Description

Polynucleotides and Polypeptides of the Invention

20   **Description of Table 1A**

       Table 1A summarizes information concerning certain polypnucleotides and polypeptides of the invention. The first column provides the gene number in the application for each clone identifier. The second column provides a unique clone identifier, "Clone ID:", for a

25   cDNA clone related to each contig sequence disclosed in Table 1A.   Third column, the cDNA Clones identified in the second column were deposited as indicated in the third column (i.e. by ATCC Deposit No:Z and deposit date).   Some of the deposits contain multiple different clones corresponding to the same gene.   In the fourth column, "Vector" refers to the type of vector contained in the corresponding cDNA Clone identified in the second column.   In the fifth column,

30   the nucleotide sequence identified as "NT SEQ ID NO:X" was assembled from partially homologous ("overlapping") sequences obtained from the corresponding cDNA clone identified in the second column and, in some cases, from additional related cDNA clones.   The overlapping sequences were assembled into a single contiguous sequence of high redundancy (usually three to five overlapping sequences at each nucleotide position), resulting in a final sequence identified as

35   SEQ ID NO:X.   In the sixth column, "Total NT Seq." refers to the total number of nucleotides in the contig sequence identified as SEQ ID NO:X."   The deposited clone may contain all or most of

these sequences, reflected by the nucleotide position indicated as "5' NT of Clone Seq." (seventh column) and the "3' NT of Clone Seq." (eighth column) of SEQ ID NO:X. In the ninth column, the nucleotide position of SEQ ID NO:X of the putative start codon (methionine) is identified as "5' NT of Start Codon." Similarly , in column ten, the nucleotide position of SEQ ID NO:X of the predicted signal sequence is identified as "5' NT of First AA of Signal Pep." In the eleventh column, the translated amino acid sequence, beginning with the methionine, is identified as "AA SEQ ID NO:Y," although other reading frames can also be routinely translated using known molecular biology techniques. The polypeptides produced by these alternative open reading frames are specifically contemplated by the present invention.

In the twelfth and thirteenth columns of Table 1A, the first and last amino acid position of SEQ ID NO:Y of the predicted signal peptide is identified as "First AA of Sig Pep" and "Last AA of Sig Pep." In the fourteenth column, the predicted first amino acid position of SEQ ID NO:Y of the secreted portion is identified as "Predicted First AA of Secreted Portion". The amino acid position of SEQ ID NO:Y of the last amino acid encoded by the open reading frame is identified in the fifteenth column as "Last AA of ORF".

SEQ ID NO:X (where X may be any of the polynucleotide sequences disclosed in the sequence listing) and the translated SEQ ID NO:Y (where Y may be any of the polypeptide sequences disclosed in the sequence listing) are sufficiently accurate and otherwise suitable for a variety of uses well known in the art and described further below. For instance, SEQ ID NO:X is useful for designing nucleic acid hybridization probes that will detect nucleic acid sequences contained in SEQ ID NO:X or the cDNA contained in the deposited clone. These probes will also hybridize to nucleic acid molecules in biological samples, thereby enabling a variety of forensic and diagnostic methods of the invention. Similarly, polypeptides identified from SEQ ID NO:Y may be used, for example, to generate antibodies which bind specifically to proteins containing the polypeptides and the secreted proteins encoded by the cDNA clones identified in Table 1A and/or elsewhere herein

Nevertheless, DNA sequences generated by sequencing reactions can contain sequencing errors. The errors exist as misidentified nucleotides, or as insertions or deletions of nucleotides in the generated DNA sequence. The erroneously inserted or deleted nucleotides cause frame shifts in the reading frames of the predicted amino acid sequence. In these cases, the predicted amino acid sequence diverges from the actual amino acid sequence, even though the generated DNA sequence may be greater than 99.9% identical to the actual DNA sequence (for example, one base insertion or deletion in an open reading frame of over 1000 bases).

Accordingly, for those applications requiring precision in the nucleotide sequence or the amino acid sequence, the present invention provides not only the generated nucleotide sequence identified as SEQ ID NO:X, and the predicted translated amino acid sequence identified as SEQ ID NO:Y, but also a sample of plasmid DNA containing a human cDNA of the invention

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deposited with the ATCC, as set forth in Table 1A. The nucleotide sequence of each deposited plasmid can readily be determined by sequencing the deposited plasmid in accordance with known methods

The predicted amino acid sequence can then be verified from such deposits. Moreover, the amino acid sequence of the protein encoded by a particular plasmid can also be directly determined by peptide sequencing or by expressing the protein in a suitable host cell containing the deposited human cDNA, collecting the protein, and determining its sequence.

Also provided in Table 1A is the name of the vector which contains the cDNA plasmid. Each vector is routinely used in the art. The following additional information is provided for convenience.

Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., *Nucleic Acids Res. 16*:7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., *Nucleic Acids Res. 17*:9494 (1989)) and pBK (Alting-Mees, M. A. et al., *Strategies 5*:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Phagemid pBS may be excised from the Lambda Zap and Uni-Zap XR vectors, and phagemid pBK may be excised from the Zap Express vector. Both phagemids may be transformed into *E. coli* strain XL-1 Blue, also available from Stratagene

Vectors pSport1, pCMVSport 1.0, pCMVSport 2.0 and pCMVSport 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, also available from Life Technologies. See, for instance, Gruber, C. E., et al., *Focus 15*:59 (1993). Vector lafmid BA (Bento Soares, Columbia University, New York, NY) contains an ampicillin resistance gene and can be transformed into *E. coli* strain XL-1 Blue. Vector pCR®2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. See, for instance, Clark, J. M., *Nuc. Acids Res. 16*:9677-9686 (1988) and Mead, D. *et al.*, *Bio/Technology 9:* (1991).

The present invention also relates to the genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, and/or a deposited cDNA (cDNA Clone ID). The corresponding gene can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include, but are not limited to, preparing probes or primers from the disclosed sequence and identifying or amplifying the corresponding gene from appropriate sources of genomic material.

Also provided in the present invention are allelic variants, orthologs, and/or species homologs. Procedures known in the art can be used to obtain full-length genes, allelic variants, splice variants, full-length coding portions, orthologs, and/or species homologs of genes

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corresponding to SEQ ID NO:X and SEQ ID NO:Y using information from the sequences disclosed herein or the clones deposited with the ATCC. For example, allelic variants and/or species homologs may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source for allelic variants and/or

5   the desired homologue.

The present invention provides a polynucleotide comprising, or alternatively consisting of, the nucleic acid sequence of SEQ ID NO:X and/or a cDNA contained in ATCC Deposit No.Z. The present invention also provides a polypeptide comprising, or alternatively, consisting of, the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X, and/or a

10   polypeptide encoded by a cDNA contained in ATCC deposit No.Z. Polynucleotides encoding a polypeptide comprising, or alternatively consisting of the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X and/or a polypeptide encoded by the cDNA contained in ATCC Deposit No.Z, are also encompassed by the invention. The present invention further encompasses a polynucleotide comprising, or alternatively consisting of the complement of the

15   nucleic acid sequence of SEQ ID NO:X, and/or the complement of the coding strand of the cDNA contained in ATCC Deposit No.Z.

Description of Table 1B (Comprised of Tables 1B.1 and 1B.2)

Table 1B.1 and Table 1B.2 summarize some of the polynucleotides encompassed by

20   the invention (including cDNA clones related to the sequences (Clone ID:), contig sequences (contig identifier (Contig ID:) and contig nucleotide sequence identifiers (SEQ ID NO:X)) and further summarizes certain characteristics of these polynucleotides and the polypeptides encoded thereby. The first column of Tables 1B.1 and 1B.2 provide the gene numbers in the application for each clone identifier. The second column of Tables 1B.1 and 1B.2 provide unique clone

25   identifiers, "Clone ID:", for cDNA clones related to each contig sequence disclosed in Table 1A and/or Table 1B. The third column of Tables 1B.1 and 1B.2 provide unique contig identifiers, "Contig ID:" for each of the contig sequences disclosed in these tables. The fourth column of Tables 1B.1 and 1B.2 provide the sequence identifiers, "SEQ ID NO:X", for each of the contig sequences disclosed in Table 1A and/or 1B.

30   **Table 1B.1**

The fifth column of Table 1B.1, "ORF (From-To)", provides the location   (i.e., nucleotide position numbers) within the polynucleotide sequence of SEQ ID NO:X that delineates the preferred open reading frame (ORF) that encodes the amino acid sequence shown in the sequence listing and referenced in Table 1B.1 as SEQ ID NO:Y (column 6). Column 7 of Table

35   1B.1 lists residues comprising predicted epitopes contained in the polypeptides encoded by each of the preferred ORFs (SEQ ID NO:Y). Identification of potential immunogenic regions was

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performed according to the method of Jameson and Wolf (CABIOS, 4; 181-186 (1988)); specifically, the Genetics Computer Group (GCG) implementation of this algorithm, embodied in the program PEPTIDESTRUCTURE (Wisconsin Package v10.0, Genetics Computer Group (GCG), Madison, Wisc.). This method returns a measure of the probability that a given residue is found on the surface of the protein. Regions where the antigenic index score is greater than 0.9 over at least 6 amino acids are indicated in Table 1B.1 as "Predicted Epitopes". In particular embodiments, polypeptides of the invention comprise, or alternatively consist of, one, two, three, four, five or more of the predicted epitopes described in Table 1B.1. It will be appreciated that depending on the analytical criteria used to predict antigenic determinants, the exact address of the determinant may vary slightly. Column 8 of Table 1B.1 ("Cytologic Band") provides the chromosomal location of polynucleotides corresponding to SEQ ID NO:X. Chromosomal location was determined by finding exact matches to EST and cDNA sequences contained in the NCBI (National Center for Biotechnology Information) UniGene database. Given a presumptive chromosomal location, disease locus association was determined by comparison with the Morbid Map, derived from Online Mendelian Inheritance in Man (Online Mendelian Inheritance in Man, OMIM™. McKusick-Nathans Institute for Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine (Bethesda, MD) 2000. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/). If the putative chromosomal location of the Query overlaps with the chromosomal location of a Morbid Map entry, an OMIM identification number is disclosed in Table 1B.1, column 9 labeled "OMIM Disease Reference(s)". A key to the OMIM reference identification numbers is provided in Table 5.

Table 1B.2

Column 5 of Table 1B.2, "Tissue Distribution" shows the expression profile of tissue, cells, and/or cell line libraries which express the polynucleotides of the invention. The first code number shown in Table 1B.2 column 5 (preceding the colon), represents the tissue/cell source identifier code corresponding to the key provided in Table 4. Expression of these polynucleotides was not observed in the other tissues and/or cell libraries tested. The second number in column 5 (following the colon), represents the number of times a sequence corresponding to the reference polynucleotide sequence (e.g., SEQ ID NO:X) was identified in the corresponding tissue/cell source. Those tissue/cell source identifier codes in which the first two letters are "AR" designate information generated using DNA array technology. Utilizing this technology, cDNAs were amplified by PCR and then transferred, in duplicate, onto the array. Gene expression was assayed through hybridization of first strand cDNA probes to the DNA array. cDNA probes were generated from total RNA extracted from a variety of different tissues and cell lines. Probe synthesis was performed in the presence of ^{33}P dCTP, using oligo(dT) to prime reverse transcription. After hybridization, high stringency washing conditions were employed to remove non-specific hybrids

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from the array. The remaining signal, emanating from each gene target, was measured using a Phosphorimager. Gene expression was reported as Phosphor Stimulating Luminescence (PSL) which reflects the level of phosphor signal generated from the probe hybridized to each of the gene targets represented on the array. A local background signal subtraction was performed before the

5   total signal generated from each array was used to normalize gene expression between the different hybridizations. The value presented after "[array code]:" represents the mean of the duplicate values, following background subtraction and probe normalization. One of skill in the art could routinely use this information to identify normal and/or diseased tissue(s) which show a predominant expression pattern of the corresponding polynucleotide of the invention or to identify

10   polynucleotides which show predominant and/or specific tissue and/or cell expression.

Description of Table 1C

Table 1C summarizes additional polynucleotides encompassed by the invention (including cDNA clones related to the sequences (Clone ID:), contig sequences (contig identifier

15   (Contig ID:) contig nucleotide sequence identifiers (SEQ ID NO:X)), and genomic sequences (SEQ ID NO:B). The first column provides a unique clone identifier, "Clone ID:", for a cDNA clone related to each contig sequence. The second column provides the sequence identifier, "SEQ ID NO:X", for each contig sequence. The third column provides a unique contig identifier, "Contig ID:" for each contig sequence. The fourth column, provides a BAC identifier "BAC ID

20   NO:A" for the BAC clone referenced in the corresponding row of the table. The fifth column provides the nucleotide sequence identifier, "SEQ ID NO:B" for a fragment of the BAC clone identified in column four of the corresponding row of the table. The sixth column, "Exon From-To", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence of SEQ ID NO:B which delineate certain polynucleotides of the invention that are also exemplary

25   members of polynucleotide sequences that encode polypeptides of the invention (e.g., polypeptides containing amino acid sequences encoded by the polynucleotide sequences delineated in column six, and fragments and variants thereof).

Description of Table 1D

30   Table 1D: In preferred embodiments, the present invention encompasses a method of detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating cardiovascular diseases or disorders; comprising administering to a patient in which such treatment, prevention, or amelioration is desired a protein, nucleic acid, or antibody of the invention (or fragment or variant thereof) represented by Table 1A, Table 1B, and Table 1C, in an amount effective to

35   detect, prevent, diagnose, prognosticate, treat, and/or ameliorate the disease or disorder.

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As indicated in Table 1D, the polynucleotides, polypeptides, agonists, or antagonists of the present invention (including antibodies) can be used in assays to test for one or more biological activities. If these polynucleotides and polypeptides do exhibit activity in a particular assay, it is likely that these molecules may be involved in the diseases associated with the biological activity.

5   Thus, the polynucleotides or polypeptides, or agonists or antagonists thereof (including antibodies) could be used to treat the associated disease.

Table 1D provides information related to biological activities for polynucleotides and polypeptides of the invention (including antibodies, agonists, and/or antagonists thereof). Table 1D also provides information related to assays which may be used to test polynucleotides and

10   polypeptides of the invention (including antibodies, agonists, and/or antagonists thereof) for the corresponding biological activities. The first column ("Gene No.") provides the gene number in the application for each clone identifier. The second column ("cDNA Clone ID:") provides the unique clone identifier for each clone as previously described and indicated in Tables 1A, 1B, and 1C. The third column ("AA SEQ ID NO:Y") indicates the Sequence Listing SEQ ID Number for

15   polypeptide sequences encoded by the corresponding cDNA clones (also as indicated in Tables 1A, 1B, and 2). The fourth column ("Biological Activity") indicates a biological activity corresponding to the indicated polypeptides (or polynucleotides encoding said polypeptides). The fifth column ("Exemplary Activity Assay") further describes the corresponding biological activity and provides information pertaining to the various types of assays which may be performed to test,

20   demonstrate, or quantify the corresponding biological activity. Table 1D describes the use of FMAT technology, *inter alia*, for testing or demonstrating various biological activities. Fluorometric microvolume assay technology (FMAT) is a fluorescence-based system which provides a means to perform nonradioactive cell- and bead-based assays to detect activation of cell signal transduction pathways. This technology was designed specifically for ligand binding and

25   immunological assays. Using this technology, fluorescent cells or beads at the bottom of the well are detected as localized areas of concentrated fluorescence using a data processing system. Unbound flurophore comprising the background signal is ignored, allowing for a wide variety of homogeneous assays. FMAT technology may be used for peptide ligand binding assays, immunofluorescence, apoptosis, cytotoxicity, and bead-based immunocapture assays. *See*,

30   Miraglia S et. al., "Homogeneous cell and bead based assays for highthroughput screening using flourometric microvolume assay technology," Journal of Biomolecular Screening; 4:193-204 (1999). In particular, FMAT technology may be used to test, confirm, and/or identify the ability of polypeptides (including polypeptide fragments and variants) to activate signal transduction pathways. For example, FMAT technology may be used to test, confirm, and/or identify the

35   ability of polypeptides to upregulate production of immunomodulatory proteins (such as, for example, interleukins, GM-CSF, Rantes, and Tumor Necrosis factors, as well as other cellular regulators (e.g. insulin)).

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Table 1D also describes the use of kinase assays for testing, demonstrating, or quantifying biological activity. In this regard, the phosphorylation and de-phosphorylation of specific amino acid residues (e.g. Tyrosine, Serine, Threonine) on cell-signal transduction proteins provides a fast, reversible means for activation and de-activation of cellular signal transduction pathways. Moreover, cell signal transduction via phosphorylation/de-phosphorylation is crucial to the regulation of a wide variety of cellular processes (e.g. proliferation, differentiation, migration, apoptosis, etc.). Accordingly, kinase assays provide a powerful tool useful for testing, confirming, and/or identifying polypeptides (including polypeptide fragments and variants) that mediate cell signal transduction events via protein phosphorylation. See e.g., Forrer, P., Tamaskovic R., and Jaussi, R. "Enzyme-Linked Immunosorbent Assay for Measurement of JNK, ERK, and p38 Kinase Activities" Biol. Chem. 379(8-9): 1101-1110 (1998).

Description of Table 1E

Table 1E: Polynucleotides encoding polypeptides of the present invention can be used in assays to test for one or more biological activities. One such biological activity which may be tested includes the ability of polynucleotides and polypeptides of the invention to stimulate up-regulation or down-regulation of expression of particular genes and proteins. Hence, if polynucleotides and polypeptides of the present invention exhibit activity in altering particular gene and protein expression patterns, it is likely that these polynucleotides and polypeptides of the present invention may be involved in, or capable of effecting changes in, diseases associated with the altered gene and protein expression profiles. Hence, polynucleotides, polypeptides, or antibodies of the present invention could be used to treat said associated diseases.

TaqMan® assays may be performed to assess the ability of polynucleotides (and polypeptides they encode) to alter the expression pattern of particular "target" genes. TaqMan® reactions are performed to evaluate the ability of a test agent to induce or repress expression of specific genes in different cell types. TaqMan® gene expression quantification assays ("TaqMan® assays") are well known to, and routinely performed by, those of ordinary skill in the art. TaqMan® assays are performed in a two step reverse transcription / polymerase chain reaction (RT-PCR). In the first (RT) step, cDNA is reverse transcribed from total RNA samples using random hexamer primers. In the second (PCR) step, PCR products are synthesized from the cDNA using gene specific primers.

To quantify gene expression the Taqman® PCR reaction exploits the 5' nuclease activity of AmpliTaq Gold® DNA Polymerase to cleave a Taqman® probe (distinct from the primers) during PCR. The Taqman® probe contains a reporter dye at the 5'-end of the probe and a quencher dye at the 3' end of the probe. When the probe is intact, the proximity of the reporter dye to the quencher dye results in suppression of the reporter fluorescence. During PCR, if the

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target of interest is present, the probe specifically anneals between the forward and reverse primer sites. AmpliTaq Fold DNA Polymerase then cleaves the probe between the reporter and quencher when the probe hybridizes to the target, resulting in increased fluorescence of the reporter (see Figure 2). Accumulation of PCR products is detected directly by monitoring the increase in fluorescence of the reporter dye.

After the probe fragments are displaced from the target, polymerization of the strand continues. The 3'-end of the probe is blocked to prevent extension of the probe during PCR. This process occurs in every cycle and does not interfere with the exponential accumulation of product. The increase in fluorescence signal is detected only if the target sequence is complementary to the probe and is amplified during PCR. Because of these requirements, any nonspecific amplification is not detected.

For test sample preparation, vector controls or constructs containing the coding sequence for the gene of interest are transfected into cells, such as for example 293T cells, and supernatants collected after 48 hours. For cell treatment and RNA isolation, multiple primary human cells or human cell lines are used; such cells may include but are not limited to, Normal Human Dermal Fibroblasts, Aortic Smooth Muscle, Human Umbilical Vein Endothelial Cells, HepG2, Daudi, Jurkat, U937, Caco, and THP-1 cell lines. Cells are plated in growth media and growth is arrested by culturing without media change for 3 days, or by switching cells to low serum media and incubating overnight. Cells are treated for 1, 6, or 24 hours with either vector control supernatant or sample supernatant (or purified/partially purified protein preparations in buffer). Total RNA is isolated; for example, by using Trizol extraction or by using the Ambion RNAqueous(TM)-4PCR RNA isolation system. Expression levels of multiple genes are analyzed using TAQMAN, and expression in the test sample is compared to control vector samples to identify genes induced or repressed. Each of the above described techniques are well known to, and routinely performed by, those of ordinary skill in the art.

Table 1E indicates particular disease classes and preferred indications for which polynucleotides, polypeptides, or antibodies of the present invention may be used in detecting, diagnosing, preventing, treating and/or ameliorating said diseases and disorders based on "target" gene expression patterns which may be up- or down-regulated by polynucleotides (and the encoded polypeptides) corresponding to each indicated cDNA Clone ID (shown in Table 1E, Column 2).

Thus, in preferred embodiments, the present invention encompasses a method of detecting, diagnosing, preventing, treating, and/or ameliorating a disease or disorder listed in the "Disease Class" and/or "Preferred Indication" columns of Table 1E; comprising administering to a patient in which such detection, diagnosis, prevention, or treatment is desired a protein, nucleic acid, or antibody of the invention (or fragment or variant thereof) in an amount effective to detect, diagnose, prevent, treat, or ameliorate the disease or disorder. The first and second columns of

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Table 1D show the "Gene No." and "cDNA Clone ID No.", respectively, indicating certain nucleic acids and proteins (or antibodies against the same) of the invention (including polynucleotide, polypeptide, and antibody fragments or variants thereof) that may be used in detecting, diagnosing, preventing, treating, or ameliorating the disease(s) or disorder(s) indicated in the corresponding

5   row in the "Disease Class" or "Preferred Indication" Columns of Table 1E.

In another embodiment, the present invention also encompasses methods of detecting, diagnosing, preventing, treating, or ameliorating a disease or disorder listed in the "Disease Class" or "Preferred Indication" Columns of Table 1E; comprising administering to a patient combinations of the proteins, nucleic acids, or antibodies of the invention (or fragments or variants

10   thereof), sharing similar indications as shown in the corresponding rows in the "Disease Class" or "Preferred Indication" Columns of Table 1E.

The "Disease Class" Column of Table 1E provides a categorized descriptive heading for diseases, disorders, and/or conditions (more fully described below) that may be detected, diagnosed, prevented, treated, or ameliorated by a protein, nucleic acid, or antibody of the

15   invention (or fragment or variant thereof).

The "Preferred Indication" Column of Table 1E describes diseases, disorders, and/or conditions that may be detected, diagnosed, prevented, treated, or ameliorated by a protein, nucleic acid, or antibody of the invention (or fragment or variant thereof).

The "Cell Line" and "Exemplary Targets" Columns of Table 1E indicate particular cell

20   lines and target genes, respectively, which may show altered gene expression patterns (i.e., up- or down-regulation of the indicated target gene) in Taqman assays, performed as described above, utilizing polynucleotides of the cDNA Clone ID shown in the corresponding row. Alteration of expression patterns of the indicated "Exemplary Target" genes is correlated with a particular "Disease Class" and/or "Preferred Indication" as shown in the corresponding row under the

25   respective column headings.

The "Exemplary Accessions" Column indicates GenBank Accessions (available online through the National Center for Biotechnology Information (NCBI) at http://www.ncbi.nlm.nih.gov/) which correspond to the "Exemplary Targets" shown in the adjacent row.

30   The recitation of "Cancer" in the "Disease Class" Column indicates that the corresponding nucleic acid and protein, or antibody against the same, of the invention (or fragment or variant thereof) may be used for example, to detect, diagnose, prevent, treat, and/or ameliorate neoplastic diseases and/or disorders (e.g., leukemias, cancers, etc., as described below under "Hyperproliferative Disorders").

35   The recitation of "Immune" in the "Disease Class" column indicates that the corresponding nucleic acid and protein, or antibody against the same, of the invention (or fragment or variant thereof), may be used for example, to detect, diagnose, prevent, treat, and/or ameliorate

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diseases and/or disorders relating to neoplastic diseases (e.g., as described below under "Hyperproliferative Disorders"), blood disorders (e.g., as described below under "Immune Activity" "Cardiovascular Disorders" and/or "Blood-Related Disorders"), and infections (e.g., as described below under "Infectious Disease").

5   The recitation of "Angiogenesis" in the "Disease Class" column indicates that the corresponding nucleic acid and protein, or antibody against the same, of the invention (or fragment or variant thereof), may be used for example, to detect, diagnose, treat, prevent, and/or ameliorate diseases and/or disorders relating to neoplastic diseases (e.g., as described below under "Hyperproliferative Disorders"), diseases and/or disorders of the cardiovascular system (e.g., as
10   described below under "Cardiovascular Disorders"), diseases and/or disorders involving cellular and genetic abnormalities (e.g., as described below under "Diseases at the Cellular Level"), diseases and/or disorders involving angiogenesis (e.g., as described below under "Anti-Angiogenesis Activity"), to promote or inhibit cell or tissue regeneration (e.g., as described below under "Regeneration"), or to promote wound healing (e.g., as described below under "Wound
15   Healing and Epithelial Cell Proliferation").

        The recitation of "Diabetes" in the "Disease Class" column indicates that the corresponding nucleic acid and protein, or antibody against the same, of the invention (or fragment or variant thereof), may be used for example, to detect, diagnose, treat, prevent, and/or ameliorate diabetes (including diabetes mellitus types I and II), as well as diseases and/or disorders associated
20   with, or consequential to, diabetes (e.g. as described below under "Endocrine Disorders," "Renal Disorders," and "Gastrointestinal Disorders").

Description of Table 2

        Table 2 summarizes homology and features of some of the polypeptides of the
25   invention. The first column provides a unique clone identifier, "Clone ID:", corresponding to a cDNA clone disclosed in Table 1A or Table 1B. The second column provides the unique contig identifier, "Contig ID:" corresponding to contigs in Table 1B and allowing for correlation with the information in Table 1B. The third column provides the sequence identifier, "SEQ ID NO:X", for the contig polynucleotide sequence. The fourth column provides the analysis method by which the
30   homology/identity disclosed in the Table was determined. Comparisons were made between polypeptides encoded by the polynucleotides of the invention and either a non-redundant protein database (herein referred to as "NR"), or a database of protein families (herein referred to as "PFAM") as further described below. The fifth column provides a description of the PFAM/NR hit having a significant match to a polypeptide of the invention. Column six provides the
35   accession number of the PFAM/NR hit disclosed in the fifth column. Column seven, "Score/Percent Identity", provides a quality score or the percent identity, of the hit disclosed in columns five and six. Columns 8 and 9, "NT From" and "NT To" respectively, delineate the

polynucleotides in "SEQ ID NO:X" that encode a polypeptide having a significant match to the PFAM/NR database as disclosed in the fifth and sixth columns. In specific embodiments polypeptides of the invention comprise, or alternatively consist of, an amino acid sequence encoded by a polynucleotide in SEQ ID NO:X as delineated in columns 8 and 9, or fragments or

5   variants thereof.

Description of Table 3

Table 3 provides polynucleotide sequences that may be disclaimed according to certain embodiments of the invention. The first column provides a unique clone identifier, "Clone ID",

10   for a cDNA clone related to contig sequences disclosed in Table 1B. The second column provides the sequence identifier, "SEQ ID NO:X", for contig sequences disclosed in Table 1A and/or Table 1B. The third column provides the unique contig identifier, "Contig ID:", for contigs disclosed in Table 1B. The fourth column provides a unique integer 'a' where 'a' is any integer between 1 and the final nucleotide minus 15 of SEQ ID NO:X, and the fifth column provides a unique integer 'b'

15   where 'b' is any integer between 15 and the final nucleotide of SEQ ID NO:X, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:X, and where b is greater than or equal to a + 14. For each of the polynucleotides shown as SEQ ID NO:X, the uniquely defined integers can be substituted into the general formula of a-b, and used to describe polynucleotides which may be preferably excluded from the invention. In certain embodiments,

20   preferably excluded from the invention are at least one, two, three, four, five, ten, or more of the polynucleotide sequence(s) having the accession number(s) disclosed in the sixth column of this Table (including for example, published sequence in connection with a particular BAC clone). In further embodiments, preferably excluded from the invention are the specific polynucleotide sequence(s) contained in the clones corresponding to at least one, two, three, four, five, ten, or

25   more of the available material having the accession numbers identified in the sixth column of this Table (including for example, the actual sequence contained in an identified BAC clone).

Description of Table 4

Table 4 provides a key to the tissue/cell source identifier code disclosed in Table 1B.2,

30   column 5. Column 1 provides the tissue/cell source identifier code disclosed in Table 1B.2, Column 5. Columns 2-5 provide a description of the tissue or cell source. Note that "Description" and "Tissue" sources (i.e. columns 2 and 3) having the prefix "a_" indicates organs, tissues, or cells derived from "adult" sources. Codes corresponding to diseased tissues are indicated in column 6 with the word "disease." The use of the word "disease" in column 6 is non-limiting.

35   The tissue or cell source may be specific (e.g. a neoplasm), or may be disease-associated (e.g., a tissue sample from a normal portion of a diseased organ). Furthermore, tissues and/or cells

lacking the "disease" designation may still be derived from sources directly or indirectly involved in a disease state or disorder, and therefore may have a further utility in that disease state or disorder. In numerous cases where the tissue/cell source is a library, column 7 identifies the vector used to generate the library.

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Description of Table 5

Table 5 provides a key to the OMIM reference identification numbers disclosed in Table 1B.1. OMIM reference identification numbers (Column 1) were derived from Online Mendelian Inheritance in Man (Online Mendelian Inheritance in Man, OMIM. McKusick-Nathans
10   Institute for Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine, (Bethesda, MD) 2000. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/). Column 2 provides diseases associated with the cytologic band disclosed in Table 1B.1, as determined using the Morbid Map database.

15   ## Description of Table 6

Table 6 summarizes some of the ATCC Deposits, Deposit dates, and ATCC designation numbers of deposits made with the ATCC in connection with the present application. These deposits were made in addition to those described in the Table 1A.

20   ## Description of Table 7

Table 7 shows the cDNA libraries sequenced, and ATCC designation numbers and vector information relating to these cDNA libraries.

The first column shows the first four letters indicating the Library from which each library clone was derived. The second column indicates the catalogued tissue description for the
25   corresponding libraries. The third column indicates the vector containing the corresponding clones. The fourth column shows the ATCC deposit designation for each libray clone as indicated by the deposit information in Table 6.

Definitions

30   The following definitions are provided to facilitate understanding of certain terms used throughout this specification.

In the present invention, "isolated" refers to material removed from its original environment (e.g., the natural environment if it is naturally occurring), and thus is altered "by the hand of man" from its natural state. For example, an isolated polynucleotide could be part of a
35   vector or a composition of matter, or could be contained within a cell, and still be "isolated" because that vector, composition of matter, or particular cell is not the original environment of the

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polynucleotide. The term "isolated" does not refer to genomic or cDNA libraries, whole cell total or mRNA preparations, genomic DNA preparations (including those separated by electrophoresis and transferred onto blots), sheared whole cell genomic DNA preparations or other compositions where the art demonstrates no distinguishing features of the polynucleotide/sequences of the present invention.

In the present invention, a "secreted" protein refers to those proteins capable of being directed to the ER, secretory vesicles, or the extracellular space as a result of a signal sequence, as well as those proteins released into the extracellular space without necessarily containing a signal sequence. If the secreted protein is released into the extracellular space, the secreted protein can undergo extracellular processing to produce a "mature" protein. Release into the extracellular space can occur by many mechanisms, including exocytosis and proteolytic cleavage.

As used herein, a "polynucleotide" refers to a molecule having a nucleic acid sequence encoding SEQ ID NO:Y or a fragment or variant thereof (e.g., the polypeptide delinated in columns fourteen and fifteen of Table 1A); a nucleic acid sequence contained in SEQ ID NO:X (as described in column 5 of Table 1A and/or Table 1B) or the complement thereof; a cDNA sequence contained in Clone ID: (as described in column 2 of Table 1A and/or Table 1B and contained within a library deposited with the ATCC); a nucleotide sequence encoding the polypeptide encoded by a nucleotide sequence in SEQ ID NO:B as defined in column 6 (EXON From-To) of Table 1C or a fragment or variant thereof; or a nucleotide coding sequence in SEQ ID NO:B as defined in column 6 of Table 1C or the complement thereof. For example, the polynucleotide can contain the nucleotide sequence of the full length cDNA sequence, including the 5' and 3' untranslated sequences, the coding region, as well as fragments, epitopes, domains, and variants of the nucleic acid sequence. Moreover, as used herein, a "polypeptide" refers to a molecule having an amino acid sequence encoded by a polynucleotide of the invention as broadly defined (obviously excluding poly-Phenylalanine or poly-Lysine peptide sequences which result from translation of a polyA tail of a sequence corresponding to a cDNA).

In the present invention, "SEQ ID NO:X" was often generated by overlapping sequences contained in multiple clones (contig analysis). A representative clone containing all or most of the sequence for SEQ ID NO:X is deposited at Human Genome Sciences, Inc. (HGS) in a catalogued and archived library. As shown, for example, in Table 1B, each clone is identified by a cDNA Clone ID (identifier generally referred to herein as Clone ID:). Each Clone ID is unique to an individual clone and the Clone ID is all the information needed to retrieve a given clone from the HGS library. Table 7 provides a list of the deposited cDNA libraries. One can use the Clone ID: to determine the library source by reference to Tables 6 and 7. Table 7 lists the deposited cDNA libraries by name and links each library to an ATCC Deposit. Library names contain four characters, for example, "HTWE." The name of a cDNA clone (Clone ID) isolated from that library begins with the same four characters, for example "HTWEP07". As mentioned below,

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Table 1A and/or Table 1B correlates the Clone ID names with SEQ ID NO:X. Thus, starting with an SEQ ID NO:X, one can use Tables 1A, 1B, 6, 7, and 9 to determine the corresponding Clone ID, which library it came from and which ATCC deposit the library is contained in. Furthermore, it is possible to retrieve a given cDNA clone from the source library by techniques known in the art and described elsewhere herein. The ATCC is located at 10801 University Boulevard, Manassas, Virginia 20110-2209, USA. The ATCC deposits were made pursuant to the terms of the Budapest Treaty on the international recognition of the deposit of microorganisms for the purposes of patent procedure.

In specific embodiments, the polynucleotides of the invention are at least 15, at least 30, at least 50, at least 100, at least 125, at least 500, or at least 1000 continuous nucleotides but are less than or equal to 300 kb, 200 kb, 100 kb, 50 kb, 15 kb, 10 kb, 7.5kb, 5 kb, 2.5 kb, 2.0 kb, or 1 kb, in length. In a further embodiment, polynucleotides of the invention comprise a portion of the coding sequences, as disclosed herein, but do not comprise all or a portion of any intron. In another embodiment, the polynucleotides comprising coding sequences do not contain coding sequences of a genomic flanking gene (i.e., 5' or 3' to the gene of interest in the genome). In other embodiments, the polynucleotides of the invention do not contain the coding sequence of more than 1000, 500, 250, 100, 50, 25, 20, 15, 10, 5, 4, 3, 2, or 1 genomic flanking gene(s).

A "polynucleotide" of the present invention also includes those polynucleotides capable of hybridizing, under stringent hybridization conditions, to sequences contained in SEQ ID NO:X, or the complement thereof (e.g., the complement of any one, two, three, four, or more of the polynucleotide fragments described herein), the polynucleotide sequence delineated in columns 7 and 8 of Table 1A or the complement thereof, the polynucleotide sequence delineated in columns 8 and 9 of Table 2 or the complement thereof, and/or cDNA sequences contained in Clone ID: (e.g., the complement of any one, two, three, four, or more of the polynucleotide fragments, or the cDNA clone within the pool of cDNA clones deposited with the ATCC, described herein), and/or the polynucleotide sequence delineated in column 6 of Table 1C or the complement thereof. "Stringent hybridization conditions" refers to an overnight incubation at 42 degree C in a solution comprising 50% formamide, 5x SSC (750 mM NaCl, 75 mM trisodium citrate), 50 mM sodium phosphate (pH 7.6), 5x Denhardt's solution, 10% dextran sulfate, and 20 µg/ml denatured, sheared salmon sperm DNA, followed by washing the filters in 0.1x SSC at about 65 degree C.

Also contemplated are nucleic acid molecules that hybridize to the polynucleotides of the present invention at lower stringency hybridization conditions. Changes in the stringency of hybridization and signal detection are primarily accomplished through the manipulation of formamide concentration (lower percentages of formamide result in lowered stringency); salt conditions, or temperature. For example, lower stringency conditions include an overnight incubation at 37 degree C in a solution comprising 6X SSPE (20X SSPE = 3M NaCl; 0.2M

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NaH$_2$PO$_4$; 0.02M EDTA, pH 7.4), 0.5% SDS, 30% formamide, 100 ug/ml salmon sperm blocking DNA; followed by washes at 50 degree C with 1XSSPE, 0.1% SDS. In addition, to achieve even lower stringency, washes performed following stringent hybridization can be done at higher salt concentrations (e.g. 5X SSC).

5   Note that variations in the above conditions may be accomplished through the inclusion and/or substitution of alternate blocking reagents used to suppress background in hybridization experiments. Typical blocking reagents include Denhardt's reagent, BLOTTO, heparin, denatured salmon sperm DNA, and commercially available proprietary formulations. The inclusion of specific blocking reagents may require modification of the hybridization conditions
10   described above, due to problems with compatibility.

Of course, a polynucleotide which hybridizes only to polyA+ sequences (such as any 3' terminal polyA+ tract of a cDNA shown in the sequence listing), or to a complementary stretch of T (or U) residues, would not be included in the definition of "polynucleotide," since such a polynucleotide would hybridize to any nucleic acid molecule containing a poly (A) stretch or the
15   complement thereof (e.g., practically any double-stranded cDNA clone generated using oligo dT as a primer).

The polynucleotide of the present invention can be composed of any polyribonucleotide or polydeoxribonucleotide, which may be unmodified RNA or DNA or modified RNA or DNA. For example, polynucleotides can be composed of single- and double-
20   stranded DNA, DNA that is a mixture of single- and double-stranded regions, single- and double-stranded RNA, and RNA that is mixture of single- and double-stranded regions, hybrid molecules comprising DNA and RNA that may be single-stranded or, more typically, double-stranded or a mixture of single- and double-stranded regions. In addition, the polynucleotide can be composed of triple-stranded regions comprising RNA or DNA or both RNA and DNA. A polynucleotide
25   may also contain one or more modified bases or DNA or RNA backbones modified for stability or for other reasons. "Modified" bases include, for example, tritylated bases and unusual bases such as inosine. A variety of modifications can be made to DNA and RNA; thus, "polynucleotide" embraces chemically, enzymatically, or metabolically modified forms.

In specific embodiments, the polynucleotides of the invention are at least 15, at least
30   30, at least 50, at least 100, at least 125, at least 500, or at least 1000 continuous nucleotides but are less than or equal to 300 kb, 200 kb, 100 kb, 50 kb, 15 kb, 10 kb, 7.5kb, 5 kb, 2.5 kb, 2.0 kb, or 1 kb, in length. In a further embodiment, polynucleotides of the invention comprise a portion of the coding sequences, as disclosed herein, but do not comprise all or a portion of any intron. In another embodiment, the polynucleotides comprising coding sequences do not contain coding
35   sequences of a genomic flanking gene (i.e., 5' or 3' to the gene of interest in the genome). In other embodiments, the polynucleotides of the invention do not contain the coding sequence of more than 1000, 500, 250, 100, 50, 25, 20, 15, 10, 5, 4, 3, 2, or 1 genomic flanking gene(s).

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"SEQ ID NO:X" refers to a polynucleotide sequence described in column 5 of Table 1A, while "SEQ ID NO:Y" refers to a polypeptide sequence described in column 10 of Table 1A. SEQ ID NO:X is identified by an integer specified in column 6 of Table 1A. The polypeptide sequence SEQ ID NO:Y is a translated open reading frame (ORF) encoded by polynucleotide SEQ ID NO:X. The polynucleotide sequences are shown in the sequence listing immediately followed by all of the polypeptide sequences. Thus, a polypeptide sequence corresponding to polynucleotide sequence SEQ ID NO:2 is the first polypeptide sequence shown in the sequence listing. The second polypeptide sequence corresponds to the polynucleotide sequence shown as SEQ ID NO:3, and so on.

The polypeptide of the present invention can be composed of amino acids joined to each other by peptide bonds or modified peptide bonds, i.e., peptide isosteres, and may contain amino acids other than the 20 gene-encoded amino acids. The polypeptides may be modified by either natural processes, such as posttranslational processing, or by chemical modification techniques which are well known in the art. Such modifications are well described in basic texts and in more detailed monographs, as well as in a voluminous research literature. Modifications can occur anywhere in a polypeptide, including the peptide backbone, the amino acid side-chains and the amino or carboxyl termini. It will be appreciated that the same type of modification may be present in the same or varying degrees at several sites in a given polypeptide. Also, a given polypeptide may contain many types of modifications. Polypeptides may be branched, for example, as a result of ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched, and branched cyclic polypeptides may result from posttranslation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-ribosylation, amidation, covalent attachment of flavin, covalent attachment of a heme moiety, covalent attachment of a nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphotidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cysteine, formation of pyroglutamate, formylation, gamma-carboxylation, glycosylation, GPI anchor formation, hydroxylation, iodination, methylation, myristoylation, oxidation, pegylation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination. (See, for instance, PROTEINS - STRUCTURE AND MOLECULAR PROPERTIES, 2nd Ed., T. E. Creighton, W. H. Freeman and Company, New York (1993); POSTTRANSLATIONAL COVALENT MODIFICATION OF PROTEINS, B. C. Johnson, Ed., Academic Press, New York, pgs. 1-12 (1983); Seifter et al., Meth. Enzymol. 182:626-646 (1990); Rattan et al., Ann. N.Y. Acad. Sci. 663:48-62 (1992)).

"SEQ ID NO:X" refers to a polynucleotide sequence described, for example, in Tables 1A, Table 1B, or Table 2, while "SEQ ID NO:Y" refers to a polypeptide sequence described in

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column 11 of Table 1A and or Table 1B. SEQ ID NO:X is identified by an integer specified in Table 1B. The polypeptide sequence SEQ ID NO:Y is a translated open reading frame (ORF) encoded by polynucleotide SEQ ID NO:X. "Clone ID:" refers to a cDNA clone described in column 2 of Table 1A and/or Table 1B.

5   "A polypeptide having functional activity" refers to a polypeptide capable of displaying one or more known functional activities associated with a full-length (complete) protein. Such functional activities include, but are not limited to, biological activity (e.g. activity useful in treating, preventing and/or ameliorating cardiovascular diseases and disorders), antigenicity (ability to bind [or compete with a polypeptide for binding] to an anti-polypeptide antibody),

10   immunogenicity (ability to generate antibody which binds to a specific polypeptide of the invention), ability to form multimers with polypeptides of the invention, and ability to bind to a receptor or ligand for a polypeptide.

        The polypeptides of the invention can be assayed for functional activity (e.g. biological activity) using or routinely modifying assays known in the art, as well as assays described herein.

15   Specifically, one of skill in the art may routinely assay secreted polypeptides (including fragments and variants) of the invention for activity using assays as described in the examples section below.

        "A polypeptide having biological activity" refers to a polypeptide exhibiting activity similar to, but not necessarily identical to, an activity of a polypeptide of the present invention, including mature forms, as measured in a particular biological assay, with or without dose

20   dependency. In the case where dose dependency does exist, it need not be identical to that of the polypeptide, but rather substantially similar to the dose-dependence in a given activity as compared to the polypeptide of the present invention (i.e., the candidate polypeptide will exhibit greater activity or not more than about 25-fold less and, preferably, not more than about tenfold less activity, and most preferably, not more than about three-fold less activity relative to the

25   polypeptide of the present invention).

TABLES

Table 1A

30   Table 1A summarizes information concerning certain polypnucleotides and polypeptides of the invention. The first column provides the gene number in the application for each clone identifier. The second column provides a unique clone identifier, "Clone ID:", for a cDNA clone related to each contig sequence disclosed in Table 1A. Third column, the cDNA Clones identified in the second column were deposited as indicated in the third column (i.e. by

35   ATCC Deposit No:Z and deposit date). Some of the deposits contain multiple different clones corresponding to the same gene. In the fourth column, "Vector" refers to the type of vector contained in the corresponding cDNA Clone identified in the second column. In the fifth column,

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the nucleotide sequence identified as "NT SEQ ID NO:X" was assembled from partially homologous ("overlapping") sequences obtained from the corresponding cDNA clone identified in the second column and, in some cases, from additional related cDNA clones. The overlapping sequences were assembled into a single contiguous sequence of high redundancy (usually three to five overlapping sequences at each nucleotide position), resulting in a final sequence identified as SEQ ID NO:X. In the sixth column, "Total NT Seq." refers to the total number of nucleotides in the contig sequence identified as SEQ ID NO:X." The deposited clone may contain all or most of these sequences, reflected by the nucleotide position indicated as "5' NT of Clone Seq." (seventh column) and the "3' NT of Clone Seq." (eighth column) of SEQ ID NO:X. In the ninth column, the nucleotide position of SEQ ID NO:X of the putative start codon (methionine) is identified as "5' NT of Start Codon." Similarly , in column ten, the nucleotide position of SEQ ID NO:X of the predicted signal sequence is identified as "5' NT of First AA of Signal Pep." In the eleventh column, the translated amino acid sequence, beginning with the methionine, is identified as "AA SEQ ID NO:Y," although other reading frames can also be routinely translated using known molecular biology techniques. The polypeptides produced by these alternative open reading frames are specifically contemplated by the present invention.

In the twelfth and thirteenth columns of Table 1A, the first and last amino acid position of SEQ ID NO:Y of the predicted signal peptide is identified as "First AA of Sig Pep" and "Last AA of Sig Pep." In the fourteenth column, the predicted first amino acid position of SEQ ID NO:Y of the secreted portion is identified as "Predicted First AA of Secreted Portion". The amino acid position of SEQ ID NO:Y of the last amino acid encoded by the open reading frame is identified in the fifteenth column as "Last AA of ORF".

SEQ ID NO:X (where X may be any of the polynucleotide sequences disclosed in the sequence listing) and the translated SEQ ID NO:Y (where Y may be any of the polypeptide sequences disclosed in the sequence listing) are sufficiently accurate and otherwise suitable for a variety of uses well known in the art and described further below. For instance, SEQ ID NO:X is useful for designing nucleic acid hybridization probes that will detect nucleic acid sequences contained in SEQ ID NO:X or the cDNA contained in the deposited clone. These probes will also hybridize to nucleic acid molecules in biological samples, thereby enabling a variety of forensic and diagnostic methods of the invention. Similarly, polypeptides identified from SEQ ID NO:Y may be used, for example, to generate antibodies which bind specifically to proteins containing the polypeptides and the secreted proteins encoded by the cDNA clones identified in Table 1A and/or elsewhere herein

Nevertheless, DNA sequences generated by sequencing reactions can contain sequencing errors. The errors exist as misidentified nucleotides, or as insertions or deletions of nucleotides in the generated DNA sequence. The erroneously inserted or deleted nucleotides cause frame shifts in the reading frames of the predicted amino acid sequence. In these cases, the

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predicted amino acid sequence diverges from the actual amino acid sequence, even though the generated DNA sequence may be greater than 99.9% identical to the actual DNA sequence (for example, one base insertion or deletion in an open reading frame of over 1000 bases).

Accordingly, for those applications requiring precision in the nucleotide sequence or the amino acid sequence, the present invention provides not only the generated nucleotide sequence identified as SEQ ID NO:X, and the predicted translated amino acid sequence identified as SEQ ID NO:Y, but also a sample of plasmid DNA containing a human cDNA of the invention deposited with the ATCC, as set forth in Table 1A. The nucleotide sequence of each deposited plasmid can readily be determined by sequencing the deposited plasmid in accordance with known methods

The predicted amino acid sequence can then be verified from such deposits. Moreover, the amino acid sequence of the protein encoded by a particular plasmid can also be directly determined by peptide sequencing or by expressing the protein in a suitable host cell containing the deposited human cDNA, collecting the protein, and determining its sequence.

Also provided in Table 1A is the name of the vector which contains the cDNA plasmid. Each vector is routinely used in the art. The following additional information is provided for convenience.

Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., *Nucleic Acids Res.* *16*:7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., *Nucleic Acids Res.* *17*:9494 (1989)) and pBK (Alting-Mees, M. A. et al., *Strategies* *5*:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Phagemid pBS may be excised from the Lambda Zap and Uni-Zap XR vectors, and phagemid pBK may be excised from the Zap Express vector. Both phagemids may be transformed into *E. coli* strain XL-1 Blue, also available from Stratagene

Vectors pSport1, pCMVSport 1.0, pCMVSport 2.0 and pCMVSport 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, also available from Life Technologies. See, for instance, Gruber, C. E., et al., *Focus* *15*:59 (1993). Vector lafmid BA (Bento Soares, Columbia University, New York, NY) contains an ampicillin resistance gene and can be transformed into *E. coli* strain XL-1 Blue. Vector pCR®2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. See, for instance, Clark, J. M., *Nuc. Acids Res.* *16*:9677-9686 (1988) and Mead, D. *et al.*, *Bio/Technology 9:* (1991).

The present invention also relates to the genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, and/or a deposited cDNA (cDNA Clone ID). The corresponding gene can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include, but are not limited to, preparing probes or primers from the disclosed sequence and

5 identifying or amplifying the corresponding gene from appropriate sources of genomic material.

Also provided in the present invention are allelic variants, orthologs, and/or species homologs. Procedures known in the art can be used to obtain full-length genes, allelic variants, splice variants, full-length coding portions, orthologs, and/or species homologs of genes corresponding to SEQ ID NO:X and SEQ ID NO:Y using information from the sequences

10 disclosed herein or the clones deposited with the ATCC. For example, allelic variants and/or species homologs may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source for allelic variants and/or the desired homologue.

The present invention provides a polynucleotide comprising, or alternatively consisting

15 of, the nucleic acid sequence of SEQ ID NO:X and/or a cDNA contained in ATCC Deposit No.Z. The present invention also provides a polypeptide comprising, or alternatively, consisting of, the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X, and/or a polypeptide encoded by a cDNA contained in ATCC deposit No.Z. Polynucleotides encoding a polypeptide comprising, or alternatively consisting of the polypeptide sequence of SEQ ID NO:Y,

20 a polypeptide encoded by SEQ ID NO:X and/or a polypeptide encoded by the cDNA contained in ATCC Deposit No.Z, are also encompassed by the invention. The present invention further encompasses a polynucleotide comprising, or alternatively consisting of the complement of the nucleic acid sequence of SEQ ID NO:X, and/or the complement of the coding strand of the cDNA contained in ATCC Deposit No.Z.

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TABLE 1A

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
1	H2CBU83	209889 05/22/98	pBluescript SK-	11	2703	1	2703	157	157	524	1	30	31	207
1	H2CBU83	209889 05/22/98	pBluescript SK-	347	2709	1	2709	157	157	860	1	30	31	51
2	H2MAC30	209299 09/25/97	pBluescript SK-	12	459	1	459	157	157	525	1	28	29	72
3	H6EDC19	209324 10/02/97	Uni-ZAP XR	13	760	324	760	389	389	526	1	25	26	114
4	HACBD91	209626 02/12/98	Uni-ZAP XR	14	1445	1	1445	117	117	527	1	42	43	49
5	HAGAQ26	209368 10/16/97	Uni-ZAP XR	15	1333	157	1333	251	251	528	1	20	21	62
6	HAGBZ81	209118 06/12/97	Uni-ZAP XR	16	1382	24	1382		65	529	1	30	31	49
7	HAGDG59	209277 09/18/97	Uni-ZAP XR	17	1734	44	1717	124	124	530	1	18	19	300
8	HAGDS35	209299 09/25/97	Uni-ZAP XR	18	751	1	751	45	45	531	1	23	24	122
8	HAGDS35	209299 09/25/97	Uni-ZAP XR	348	813	1	813	52	52	861	1	23	24	118
9	HAGFG51	203364 10/19/98	Uni-ZAP XR	19	1313	1	1313	163	163	532	1	23	24	43

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
10	HAIBO71	209145 07/17/97	Uni-ZAP XR	20	752	172	752	325	325	533	1	28	29	66
11	HAIFL18	209852 05/07/98	Uni-ZAP XR	21	879	1	879	274	274	534	1	29	30	140
12	HAJAF57	203364 10/19/98	pCMVSport 3.0	22	2761	1	2761	43	43	535	1	1	2	94
13	HAJAN23	PTA-322 07/09/99	pCMVSport 3.0	23	2849	1	2849	109	109	536	1	15	16	563
13	HAJAN23	PTA-322 07/09/99	pCMVSport 3.0	349	2288	1	2288	120	120	862	1	15	16	169
14	HAJBR69	209626 02/12/98	pCMVSport 3.0	24	755	1	755	262	262	537	1	19	20	53
15	HAMFE15	203364 10/19/98	pCMVSport 3.0	25	4129	1	4129	1495	1495	538	1	34	35	421
15	HAMFE15	203364 10/19/98	pCMVSport 3.0	350	3758	1	3758	226	226	863	1	23	24	47
16	HAMGG68	209878 05/18/98	pCMVSport 3.0	26	1458	1	1458	312	312	539	1	20	21	55
17	HAMGR28	209965 06/11/98	pCMVSport 3.0	27	1674	47	1674	98	98	540	1	18	19	242
17	HAMGR28	209965 06/11/98	pCMVSport 3.0	351	1534	1	1534	40	40	864	1	18	19	203
18	HAPOM49	209878 05/18/98	Uni-ZAP XR	28	2005	1	2005	251	251	541	1	22	23	189
18	HAPOM49	209878 05/18/98	Uni-ZAP XR	352	2664	1	2664	448	448	865	1	1	2	123

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
19	HAPPW30	209683 03/20/98	Uni-ZAP XR	29	1472	1	1472	59	59	542	1	22	23	264
19	HAPPW30	209683 03/20/98	Uni-ZAP XR	353	1508	14	1501	54	54	866	1	22	23	91
20	HATBR65	209626 02/12/98	Uni-ZAP XR	30	812	1	812	252	252	543	1	16	17	64
21	HATCB92	209683 03/20/98	Uni-ZAP XR	31	1756	1	1756	247	247	544	1	37	38	56
22	HATEE46	209407 10/23/97	Uni-ZAP XR	32	1675	136	863	241	241	545	1	21	22	53
23	HAUAI83	209626 02/12/98	Uni-ZAP XR	33	910	1	886	253	253	546	1	18	19	49
23	HAUAI83	209626 02/12/98	Uni-ZAP XR	354	1076	1	1076		575	867	1	10	11	23
24	HBAMB15	209683 03/20/98	pSport1	34	821	330	821	390	390	547	1	19	20	59
25	HBGBA69	209878 05/18/98	Uni-ZAP XR	35	981	1	981	124	124	548	1	38	39	240
25	HBGBA69	209878 05/18/98	Uni-ZAP XR	355	943	1	933	62	62	868	1	38	39	60
26	HBIAE26	209224 08/28/97	Uni-ZAP XR	36	1038	1	1038	75	75	549	1	18	19	39
27	HBINS58	PTA-885 10/28/99	pCMVSport 3.0	37	843	1	843	57	57	550	1	30	31	174
27	HBINS58	PTA-885 10/28/99	pCMVSport 3.0	356	1566	1	1566	71	71	869	1	29	30	173

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
27	HBINS58	PTA-885 10/28/99	pCMVSport 3.0	357	1067	1	1067	100	100	870	1	29	30	210
28	HBJNC59	PTA-622 09/02/99	Uni-ZAP XR	38	1061	1	1061	66	66	551	1	22	23	245
28	HBJNC59	PTA-622 09/02/99	Uni-ZAP XR	358	1021	1	1021	66	66	871	1	22	23	99
28	HBJNC59	PTA-622 09/02/99	Uni-ZAP XR	359	1086	1	1023	64	64	872	1	22	23	245
29	HBNAW17	209242 09/12/97	Uni-ZAP XR	39	601	1	601	77	77	552	1	37	38	61
30	HBOEG69	203081 07/30/98	pSport1	40	1411	1	1411	302	302	553	1	19	20	54
31	HCACU58	209626 02/12/98	Uni-ZAP XR	41	1554	1	1554	137	137	554	1	30	31	83
32	HCE2F54	209626 02/12/98	Uni-ZAP XR	42	1276	19	1256	166	166	555	1	19	20	319
33	HCE3G69	209878 05/18/98	Uni-ZAP XR	43	2084	1	2084	165	165	556	1	19	20	336
33	HCE3G69	209878 05/18/98	Uni-ZAP XR	360	2078	1	2078	165	165	873	1	19	20	105
34	HCE5F43	209580 01/14/98	Uni-ZAP XR	44	1765	1	1765	113	113	557	1	20	21	272
35	HCEFB80	PTA-2069 06/09/00	Uni-ZAP XR	45	2494	1	2494	12	12	558	1	35	36	89
35	HCEFB80	PTA-2069 06/09/00	Uni-ZAP XR	361	2494	1	2451	5	5	874	1	35	36	89

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
36	HCENK38	209651 03/04/98	Uni-ZAP XR	46	1509	1	1509	10	10	559	1	28	29	52
37	HCEWE20	209300 09/25/97	Uni-ZAP XR	47	885	13	885	166	166	560	1	18	19	51
38	HCFNN01	209086 05/29/97	pSport1	48	1261	154	1261	254	254	561	1	27	28	43
39	HCGMD59	209627 02/12/98	pCMVSport 2.0	49	790	1	780	438	438	562	1	30	31	74
40	HCHNF25	209651 03/04/98	pSport1	50	3576	1	3576	1130	1130	563	1	30	31	169
40	HCHNF25	209651 03/04/98	pSport1	362	807	1	807	180	180	875	1	30	31	147
41	HCNDR47	PTA-855 10/18/99	Lambda ZAP II	51	1343	1	1343	21	21	564	1	24	25	127
41	HCNDR47	PTA-855 10/18/99	Lambda ZAP II	363	845	1	845	124	124	876	1	47	48	127
41	HCNDR47	PTA-855 10/18/99	Lambda ZAP II	364	738	1	738		603	877	1	8	9	9
42	HCNSB61	209242 09/12/97	pBluescript	52	712	1	712	218	218	565	1	21	22	43
43	HCNSM70	209580 01/14/98	pBluescript	53	1089	1	1089	107	107	566	1	26	27	215
43	HCNSM70	209580 01/14/98	pBluescript	365	1145	62	1145	161	161	878	1	26	27	91
44	HCUCK44	209853 05/07/98	ZAP Express	54	1139	573	1133	593	593	567	1	30	31	60

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
45	HCUEO60	209215 08/21/97	ZAP Express	55	1222	1	1222	102	102	568	1	34	35	64
46	HCUHK65	209641 02/25/98	ZAP Express	56	367	1	367	80	80	569	1	26	27	79
46	HCUHK65	209641 02/25/98	ZAP Express	366	3113	2577	2946	770	770	879	1	30	31	708
47	HCUIM65	209324 10/02/97	ZAP Express	57	875	331	736	557	557	570	1	27	28	47
48	HCWDS72	209852 05/07/98	ZAP Express	58	320	1	320	19	19	571	1	17	18	100
49	HCWGU37	PTA-883 10/28/99	ZAP Express	59	2777	1	2777	194	194	572	1			10
49	HCWGU37	PTA-883 10/28/99	ZAP Express	367	1651	1	1651	187	187	880	1			10
50	HCWKC15	209324 10/02/97	ZAP Express	60	710	1	710	37	37	573	1	18	19	40
51	HCWLD74	209626 02/12/98	ZAP Express	61	1540	1	1540	138	138	574	1	21	22	65
52	HDHEB60	209215 08/21/97	pCMVSport 2.0	62	1421	235	1421	568	568	575	1	24	25	108
53	HDLAC10	209745 04/07/98	pCMVSport 2.0	63	1477	1	1477	132	132	576	1	29	30	81
54	HDPBA28	PTA-163 06/01/99	pCMVSport 3.0	64	3447	197	3447	259	259	577	1	32	33	941
54	HDPBA28	PTA-163 06/01/99	pCMVSport 3.0	368	4909	1	4909	69	69	881	1	32	33	941

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
55	HDPBQ71	209877 05/18/98	pCMVSport 3.0	65	2312	1	2312	93	93	578	1	33	34	612
55	HDPBQ71	209877 05/18/98	pCMVSport 3.0	369	2242	6	2242	24	24	882	1	33	34	612
55	HDPBQ71	209877 05/18/98	pCMVSport 3.0	370	2381	146	2381	165	165	883	1	33	34	456
56	HDPCL63	PTA-1544 03/21/00	pCMVSport 3.0	66	3037	115	3037	35	35	579	1	58	59	267
56	HDPCL63	PTA-1544 03/21/00	pCMVSport 3.0	371	2921	1	2921	260	260	884	1	17	18	157
56	HDPCL63	PTA-1544 03/21/00	pCMVSport 3.0	372	1259	358	1259		605	885	1	6	7	118
57	HDPCO25	209125 06/19/97	pCMVSport 3.0	67	767	76	767	182	182	580	1	20	21	53
58	HDPFF39	209511 12/03/97	pCMVSport 3.0	68	1256	1	1256	175	175	581	1	18	19	196
59	HDPFP29	209626 02/12/98	pCMVSport 3.0	69	1057	1	1057	293	293	582	1	30	31	52
60	HDPGI49	203070 07/27/98	pCMVSport 3.0	70	2683	1	2640	266	266	583	1	29	30	72
61	HDPGT01	203027 06/26/98	pCMVSport 3.0	71	2687	138	2687	8	8	584	1	28	29	87
62	HDPHI51	209125 06/19/97	pCMVSport 3.0	72	728	1	728	245	245	585	1	30	31	40
63	HDPJM30	209563 12/18/97	pCMVSport 3.0	73	1635	308	1633	59	59	586	1	59	60	525

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
63	HDPJM30	209563 12/18/97	pCMVSport 3.0	373	1314	1	1313	259	259	886	1	20	21	59
64	HDPMM88	PTA-848 10/13/99	pCMVSport 3.0	74	4893	1	4893	100	100	587	1	37	38	937
64	HDPMM88	PTA-848 10/13/99	pCMVSport 3.0	374	468	1	468	141	141	887	1	20	21	109
64	HDPMM88	PTA-848 10/13/99	pCMVSport 3.0	375	181	1	181		44	888	1	7	8	46
64	HDPMM88	PTA-848 10/13/99	pCMVSport 3.0	376	612	1	612		419	889	1			6
64	HDPMM88	PTA-848 10/13/99	pCMVSport 3.0	377	1024	1	1024		111	890	1	5	6	11
64	HDPMM88	PTA-848 10/13/99	pCMVSport 3.0	378	366	18	321		167	891	1	1	2	56
64	HDPMM88	PTA-848 10/13/99	pCMVSport 3.0	379	519	1	519		28	892	1	1	2	53
65	HDPNC61	209627 02/12/98	pCMVSport 3.0	75	1410	1	1410	20	20	588	1	22	23	94
66	HDPOJ08	209878 05/18/98	pCMVSport 3.0	76	1655	1	1655	159	159	589	1	18	19	122
67	HDPOZ56	209889 05/22/98	pCMVSport 3.0	77	1905	1	1905	91	91	590	1	21	22	567
67	HDPOZ56	209889 05/22/98	pCMVSport 3.0	380	1867	415	1867	103	103	893	1	21	22	566
67	HDPOZ56	209889 05/22/98	pCMVSport 3.0	381	1722	1	1722	59	59	894	1	21	22	319

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
68	HDPPN86	PTA-867 10/26/99	pCMVSport 3.0	78	6297	1	6297	127	127	591	1	32	33	46
68	HDPPN86	PTA-867 10/26/99	pCMVSport 3.0	382	2042	1	2042	117	117	895	1	26	27	46
69	HDPSB18	PTA-868 10/26/99	pCMVSport 3.0	79	3408	1	3408	123	123	592	1	18	19	66
69	HDPSB18	PTA-868 10/26/99	pCMVSport 3.0	383	308	1	308		116	896	1	17	18	64
69	HDPSB18	PTA-868 10/26/99	pCMVSport 3.0	384	1568	1	1568		1525	897	1	7	8	14
69	HDPSB18	PTA-868 10/26/99	pCMVSport 3.0	385	865	1	865		345	898	1	1	2	107
70	HDPSH53	PTA-868 10/26/99	pCMVSport 3.0	80	1663	1	1663	158	158	593	1	19	20	90
70	HDPSH53	PTA-868 10/26/99	pCMVSport 3.0	386	1687	1	1687	153	153	899	1	19	20	127
70	HDPSH53	PTA-868 10/26/99	pCMVSport 3.0	387	570	1	570	212	212	900	1	19	20	90
71	HDPSP01	209745 04/07/98	pCMVSport 3.0	81	2343	1	2343	184	184	594	1	20	21	710
71	HDPSP01	209745 04/07/98	pCMVSport 3.0	388	1752	1	1752	227	227	901	1	20	21	308
72	HDPSP54	209782 04/20/98	pCMVSport 3.0	82	3091	2304	3091	2356	2356	595	1	18	19	48
72	HDPSP54	209782 04/20/98	pCMVSport 3.0	389	536	1	536	179	179	902	1	41	42	55

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
73	HDPTD15	209782 04/20/98	pCMVSport 3.0	83	1396	1	1396	223	223	596	1	18	19	200
74	HDPUW68	203331 10/08/98	pCMVSport 3.0	84	1748	1	1748	40	40	597	1	18	19	467
75	HDPWN93	PTA-868 10/26/99	pCMVSport 3.0	85	2679	1	2669	45	45	598	1	19	20	802
75	HDPWN93	PTA-868 10/26/99	pCMVSport 3.0	390	716	1	716	35	35	903	1	19	20	214
75	HDPWN93	PTA-868 10/26/99	pCMVSport 3.0	391	2716	26	2716	27	27	904	1	19	20	43
76	HDPXY01	PTA-868 10/26/99	pCMVSport 3.0	86	766	1	766	23	23	599	1	37	38	98
76	HDPXY01	PTA-868 10/26/99	pCMVSport 3.0	392	2409	1	2409	33	33	905	1	37	38	98
76	HDPXY01	PTA-868 10/26/99	pCMVSport 3.0	393	737	1	423		539	906	1	9	10	22
76	HDPXY01	PTA-868 10/26/99	pCMVSport 3.0	394	1471	105	1471		1190	907	1	16	17	25
77	HDTBD53	PTA-848 10/13/99	pCMVSport 2.0	87	2803	1	2803	288	288	600	1	22	23	365
77	HDTBD53	PTA-848 10/13/99	pCMVSport 2.0	395	3302	1	2718	292	292	908	1	22	23	365
78	HDTBV77	203070 07/27/98	pCMVSport 2.0	88	2181	1	2181	326	326	601	1	22	23	608
79	HDTDQ23	209965 06/11/98	pCMVSport 2.0	89	2207	1	2207	132	132	602	1	20	21	56

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
79	HDTDQ23	209965 06/11/98	pCMVSport 2.0	396	2227	1	2206	148	148	909	1	20	21	108
79	HDTDQ23	209965 06/11/98	pCMVSport 2.0	397	2214	1	2206	148	148	910	1	20	21	73
80	HE2DE47	97923 03/07/97 209071 05/22/97	Uni-ZAP XR	90	3533	2821	3532	808	808	603	1	30	31	540
80	HE2DE47	97923 03/07/97 209071 05/22/97	Uni-ZAP XR	398	1145	435	1115	515	515	911	1	22	23	81
81	HE2EB74	209225 08/28/97	Uni-ZAP XR	91	1434	311	1418	507	507	604	1	15	16	19
82	HE2NV57	209877 05/18/98	Uni-ZAP XR	92	867	1	867	99	99	605	1	36	37	99
83	HE2PH36	209603 01/29/98	Uni-ZAP XR	93	1558	1	1558	28	28	606	1	21	22	66
84	HE8DS15	PTA-1544 03/21/00	Uni-ZAP XR	94	2199	1	2199	91	91	607	1	24	25	72
85	HE9CP41	209368 10/16/97	Uni-ZAP XR	95	1392	1	1392	132	132	608	1	20	21	41
86	HE9DG49	97923 03/07/97 209071 05/22/97	Uni-ZAP XR	96	717	1	717	70	70	609	1	28	29	201

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86	HE9DG49	97923 03/07/97 209071 05/22/97	Uni-ZAP XR	399	717	1	717	70	70	912	1	27	28	201
86	HE9DG49	97923 03/07/97 209071 05/22/97	Uni-ZAP XR	400	713	17	713	78	78	913	1	28	29	203
87	HE9HY07	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	97	832	1	832	35	35	610	1	26	27	41
88	HEBEJ18	203069 07/27/98	Uni-ZAP XR	98	685	7	649	51	51	611	1	15	16	139
89	HEEAQ11	203071 07/27/98	Uni-ZAP XR	99	921	1	921	213	213	612	1	28	29	147
90	HEGAH43	209277 09/18/97	Uni-ZAP XR	100	442	1	442	29	29	613	1	20	21	111
91	HELHD85	PTA-1544 03/21/00	Uni-ZAP XR	101	1886	1	1886	41	41	614	1	25	26	79
92	HEOMQ63	209563 12/18/97	pSport1	102	1336	1	1336	123	123	615	1	23	24	47
93	HEPAA46	209551 12/12/97	Uni-ZAP XR	103	1129	1	1129	18	18	616	1	20	21	123
94	HEPAB80	209423 10/30/97	Uni-ZAP XR	104	799	1	799	73	73	617	1	28	29	121

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
94	HEPAB80	209423 10/30/97	Uni-ZAP XR	401	802	1	802	67	67	914	1	28	29	122
95	HFABG18	PTA-1544 03/21/00	Uni-ZAP XR	105	1345	1	1345	53	53	618	1	26	27	87
96	HFABH95	209407 10/23/97	Uni-ZAP XR	106	1347	1	1347	199	199	619	1	21	22	116
97	HFAEF57	209277 09/18/97	Uni-ZAP XR	107	642	1	642	232	232	620	1	42	43	86
98	HFAMH77	209300 09/25/97	Uni-ZAP XR	108	669	96	669	240	240	621	1	33	34	61
99	HFCCQ50	209463 11/14/97	Uni-ZAP XR	109	1271	1	1271	47	47	622	1	20	21	352
100	HFCEB37	209008 04/28/97 209084 05/29/97	Uni-ZAP XR	110	802	352	802		487	623	1			10
101	HFFAD59	209242 09/12/97	Lambda ZAP II	111	470	1	470	44	44	624	1	17	18	45
102	HFFAL36	209368 10/16/97	Lambda ZAP II	112	1020	1	1020	68	68	625	1	35	36	56
103	HFGAD82	209225 08/28/97	Uni-ZAP XR	113	1881	772	1861	1019	1019	626	1	18	19	38
104	HFIUR10	209277 09/18/97	pSport1	114	541	1	541	50	50	627	1	22	23	44
105	HFTBM50	209300 09/25/97	Uni-ZAP XR	115	762	1	740	158	158	628	1	20	21	34

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
106	HFTDZ36	209300 09/25/97	Uni-ZAP XR	116	1103	231	1103	547	547	629	1	22	23	68
107	HFVAB79	209368 10/16/97	Uni-ZAP XR	117	1175	1	1175	133	133	630	1	15	16	194
107	HFVAB79	209368 10/16/97	Uni-ZAP XR	402	1186	1	1186	139	139	915	1	15	16	194
108	HFVGE32	PTA-844 10/13/99	pBluescript	118	572	1	572	154	154	631	1	32	33	79
108	HFVGE32	PTA-844. 10/13/99	pBluescript	403	470	2	470		1	916	1	1	2	67
109	HFXBL33	203071 07/27/98	Lambda ZAP II	119	1633	1	1633	152	152	632	1	24	25	162
110	HFXDN63	209346 10/09/97	Lambda ZAP II	120	1026	1	1026	33	33	633	1	14	15	53
111	HFXJX44	209782 04/20/98	Lambda ZAP II	121	1384	1	1384	98	98	634	1	18	19	47
112	HFXKJ03	209215 08/21/97	Lambda ZAP II	122	941	1	941	179	179	635	1	33	34	41
113	HFXKT05	209651 03/04/98	Lambda ZAP II	123	1715	1	1715	204	204	636	1	18	19	79
114	HGBHI35	209423 10/30/97	Uni-ZAP XR	124	1437	71	1276	87	87	637	1	16	17	292
115	HGBIB74	203648 02/09/99	Uni-ZAP XR	125	1816	1	1804	14	14	638	1	23	24	377
115	HGBIB74	203648 02/09/99	Uni-ZAP XR	404	1821	1	1821	28	28	917	1	20	21	170

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
115	HGBIB74	203648 02/09/99	Uni-ZAP XR	405	1094	1	1094		2	918	1	1	2	151
116	HGLAF75	209407 10/23/97	Uni-ZAP XR	126	776	1	776	231	231	639	1	28	29	121
117	HGLAL82	209242 09/12/97	Uni-ZAP XR	127	406	1	406	144	144	640	1	19	20	26
118	HHEMA59	203364 10/19/98	pCMVSport 3.0	128	3102	1	3099	239	239	641	1	20	21	76
119	HHENV10	209368 10/16/97	pCMVSport 3.0	129	1155	1	1155	143	143	642	1	27	28	50
120	HHEPM33	PTA-322 07/09/99	pCMVSport 3.0	130	1459	1	1459	269	269	643	1	20	21	82
121	HHFBY53	203364 10/19/98	Uni-ZAP XR	131	870	1	870	172	172	644	1	18	19	64
122	HHFGR93	209746 04/07/98	Uni-ZAP XR	132	1835	1	1835	132	132	645	1	29	30	390
122	HHFGR93	209746 04/07/98	Uni-ZAP XR	406	1932	1	1836	130	130	919	1	29	30	236
123	HHGCG53	97899 02/26/97 209045 05/15/97	Lambda ZAP II	133	407	8	407	230	230	646	1	33	34	44
124	HHGCM76	97958 03/13/97 209072 05/22/97	Lambda ZAP II	134	711	1	711	270	270	647	1	22	23	89

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
124	HHGCM76	97958 03/13/97 209072 05/22/97	Lambda ZAP II	407	711	8	711	270	270	920	1			11
125	HHGDF16	209463 11/14/97	Lambda ZAP II	135	890	215	890	253	253	648	1	26	27	52
126	HHPDX20	209580 01/14/98	Uni-ZAP XR	136	1161	1	1161	174	174	649	1	30	31	66
127	HHPEN62	209746 04/07/98	Uni-ZAP XR	137	2152	141	2152	183	183	650	1	27	28	508
128	HHPGO40	209878 05/18/98	Uni-ZAP XR	138	1002	1	1002	116	116	651	1	26	27	295
128	HHPGO40	209878 05/18/98	Uni-ZAP XR	408	973	1	973	68	68	921	1	37	38	302
128	HHPGO40	209878 05/18/98	Uni-ZAP XR	409	984	1	984	74	74	922	1	37	38	224
129	HHSDX28	209346 10/09/97	Uni-ZAP XR	139	1113	1	1113	90	90	652	1	21	22	56
130	HILCF66	209627 02/12/98	pBluescript SK-	140	1668	740	1668	331	331	653	1	21	22	44
131	HJABB94	209119 06/12/97	pBluescript SK-	141	1555	1	1555	74	74	654	1	28	29	77
132	HJACG02	209215 08/21/97	pBluescript SK-	142	575	1	575	66	66	655	1	22	23	108
132	HJACG02	209215 08/21/97	pBluescript SK-	410	553	1	553	47	47	923	1	23	24	108

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
133	HJACG30	PTA-843 10/13/99	pBluescript SK-	143	1532	1	1532	291	291	656	1	27	28	44
133	HJACG30	PTA-843 10/13/99	pBluescript SK-	411	1614	1020	1614		50	924	1	1	2	130
133	HJACG30	PTA-843 10/13/99	pBluescript SK-	412	1087	491	1087		350	925	1	1	2	122
134	HJBCY35	209877 05/18/98	pBluescript SK-	144	1559	93	1272	232	232	657	1	23	24	327
135	HJMBI18	209580 01/14/98	pCMVSport 3.0	145	1021	303	1021	574	574	658	1	19	20	80
136	HJMBM38	209300 09/25/97	pCMVSport 3.0	146	1024	316	1023	387	387	659	1	14	15	112
137	HJPAD75	209641 02/25/98	Uni-ZAP XR	147	1231	1	1231	60	60	660	1	29	30	91
138	HJPCP42	PTA-843 10/13/99	Uni-ZAP XR	148	1223	1	1223		156	661	1	20	21	223
138	HJPCP42	PTA-843 10/13/99	Uni-ZAP XR	413	1201	1	1201		134	926	1	20	21	223
138	HJPCP42	PTA-843 10/13/99	Uni-ZAP XR	414	628	229	628	229	468	927	1			8
138	HJPCP42	PTA-843 10/13/99	Uni-ZAP XR	415	425	237	348		1	928	1	1	2	83
139	HKABI84	209603 01/29/98	pCMVSport 2.0	149	1238	45	1238	274	274	662	1	16	17	47
140	HKABZ65	209683 03/20/98	pCMVSport 2.0	150	1189	1	1189	77	77	663	1	17	18	243

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
140	HKABZ65	209683 03/20/98	pCMVSport 2.0	416	1191	1	1191	69	69	929	1	17	18	243
141	HKACB56	209346 10/09/97	pCMVSport 2.0	151	496	1	496	27	27	664	1	23	24	80
142	HKACD58	209346 10/09/97	pCMVSport 2.0	152	3153	1	3153	38	38	665	1	25	26	301
142	HKACD58	209346 10/09/97	pCMVSport 2.0	417	1626	1	1626	35	35	930	1	25	26	154
143	HKACH44	209300 09/25/97	pCMVSport 2.0	153	686	1	686	375	375	666	1	25	26	44
144	HKAEV06	209627 02/12/98	pCMVSport 2.0	154	2496	1	2496	501	501	667	1	30	31	438
144	HKAEV06	209627 02/12/98	pCMVSport 2.0	418	2351	1	2351	197	197	931	1	29	30	57
145	HKAFT66	PTA-849 10/13/99	pCMVSport 2.0	155	1001	270	1001	508	508	668	1	41	42	107
145	HKAFT66	PTA-849 10/13/99	pCMVSport 2.0	419	1001	270	1001	508	508	932	1	41	42	107
145	HKAFT66	PTA-849 10/13/99	pCMVSport 2.0	420	669	1	669	234	234	933	1			37
146	HKB1E57	209651 03/04/98	pCMVSport 1	156	1142	1038	1142	178	178	669	1	30	31	234
146	HKB1E57	209651 03/04/98	pCMVSport 1	421	417	1	417	30	30	934	1	26	27	46
147	HKFBC53	209782 04/20/98	ZAP Express	157	2238	1	2238	64	64	670	1	15	16	470

Gene No.	cDNA Clone ID	ATCC Deposit No-Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
147	HKFBC53	209782 04/20/98	ZAP Express	422	1949	1	1906	41	41	935	1	18	19	442
147	HKFBC53	209782 04/20/98	ZAP Express	423	1487	1	1487		3	936	1	1	2	309
147	HKFBC53	209782 04/20/98	ZAP Express	424	1525	1	1525		3	937	1	1	2	243
148	HKGDL36	209877 05/18/98	pSport1	158	1052	1	1052	53	53	671	1	33	34	260
148	HKGDL36	209877 05/18/98	pSport1	425	1050	1	1050	55	55	938	1	33	34	148
149	HKISB57	209603 01/29/98	pBluescript	159	1492	1	1439	130	130	672	1	19	20	95
150	HKMLM11	209236 09/04/97	pBluescript	160	954	1	954	82	82	673	1	20	21	130
151	HKMLP68	PTA-845 10/13/99	pBluescript	161	2784	1	2784	130	130	674	1	24	25	80
151	HKMLP68	PTA-845 10/13/99	pBluescript	426	718	1	718	153	153	939	1	24	25	80
151	HKMLP68	PTA-845 10/13/99	pBluescript	427	614	1	614		471	940	1	1	2	47
152	HKMMD13	209568 01/06/98	pBluescript	162	943	1	943	342	342	675	1	21	22	49
153	HKMMW74	209463 11/14/97	pBluescript	163	1794	1	1794	202	202	676	1	21	22	41
154	HKMND01	203069 07/27/98	pBluescript	164	887	1	887	23	23	677	1	26	27	50

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
155	HLDBE54	209563 12/18/97	pCMVSport 3.0	165	1222	1	1222	155	155	678	1	38	39	318
155	HLDBE54	209563 12/18/97	pCMVSport 3.0	428	1194	1	1194	130	130	941	1	26	27	89
155	HLDBE54	209563 12/18/97	pCMVSport 3.0	429	2334	1874	2334	133	133	942	1	33	34	486
156	HLDBX13	203331 10/08/98	pCMVSport 3.0	166	1815	1	1815	303	303	679	1	39	40	55
157	HLDON23	209628 02/12/98	pCMVSport 3.0	167	1262	208	1256	368	368	680	1	20	21	113
158	HLDQC46	PTA-1544 03/21/00	pCMVSport 3.0	168	632	1	632	163	163	681	1	34	35	87
159	HLDQR62	203027 06/26/98	pCMVSport 3.0	169	2572	427	2572	520	520	682	1	18	19	161
160	HLDQU79	203071 07/27/98	pCMVSport 3.0	170	1488	1	1488	99	99	683	1	23	24	348
161	HLDRM43	209628 02/12/98	pCMVSport 3.0	171	609	1	609	24	24	684	1	20	21	151
161	HLDRM43	209628 02/12/98	pCMVSport 3.0	430	759	1	759	164	164	943	1	20	21	151
162	HLDRP33	209641 02/25/98	pCMVSport 3.0	172	612	1	612	215	215	685	1	26	27	41
163	HLHAL68	209746 04/07/98	Uni-ZAP XR	173	704	1	704	30	30	686	1	21	22	44
164	HLHFP03	209126 06/19/97	Uni-ZAP XR	174	613	1	613	224	224	687	1	19	20	116

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
165	HLIBD68	203071 07/27/98	pCMVSport 1	175	1022	1	1022	186	186	688	1	35	36	50
166	HLICQ90	203517 12/10/98	pCMVSport 1	176	1766	1	1766	249	249	689	1	29	30	206
167	HLMBO76	209603 01/29/98	Lambda ZAP II	177	815	1	795	43	43	690	1	43	44	107
168	HLTEJ06	209346 10/09/97	Uni-ZAP XR	178	617	69	617	197	197	691	1	22	23	55
169	HLTHR66	209782 04/20/98	Uni-ZAP XR	179	2286	1	2286	5	5	692	1	34	35	75
170	HLTIP94	PTA-2076 06/09/00	Uni-ZAP XR	180	1240	1	1170	226	226	693	1	26	27	97
170	HLTIP94	PTA-2076 06/09/00	Uni-ZAP XR	431	647	1	647	226	226	944	1	26	27	65
170	HLTIP94	PTA-2076 06/09/00	Uni-ZAP XR	432	1321	870	1209		3	945	1	1	2	299
171	HLWAA17	209626 02/12/98	pCMVSport 3.0	181	997	246	997	436	436	694	1	15	16	187
172	HLWAA88	209551 12/12/97	pCMVSport 3.0	182	1770	1	1770	35	35	695	1	22	23	113
172	HLWAA88	209551 12/12/97	pCMVSport 3.0	433	1636	1	1636	51	51	946	1	22	23	488
173	HLWAD77	209651 03/04/98	pCMVSport 3.0	183	1167	304	1167	326	326	696	1	24	25	140
174	HLWAE11	203071 07/27/98	pCMVSport 3.0	184	1618	1	1618	28	28	697	1	46	47	278

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
175	HLWAO22	209511 12/03/97	pCMVSport 3.0	185	1338	1	1311	212	212	698	1	21	22	354
176	HLWBHI8	PTA-849 10/13/99	pCMVSport 3.0	186	813	1	813	107	107	699	1	18	19	60
176	HLWBHI8	PTA-849 10/13/99	pCMVSport 3.0	434	645	1	645	67	67	947	1	18	19	60
177	HLWBY76	203517 12/10/98	pCMVSport 3.0	187	2081	1	2081	432	432	700	1	27	28	232
178	HLYAC95	203071 07/27/98	pSport1	188	312	1	312	92	92	701	1	16	17	46
179	HMADK33	209368 10/16/97	Uni-ZAP XR	189	864	1	864	161	161	702	1	24	25	152
180	HMADS41	209563 12/18/97	Uni-ZAP XR	190	1267	1	1267	267	267	703	1	21	22	88
181	HMAMI15	PTA-2075 06/09/00	Uni-ZAP XR	191	1258	1	1258	4	4	704	1	26	27	340
181	HMAMI15	PTA-2075 06/09/00	Uni-ZAP XR	435	1084	1	1084	3	3	948	1	26	27	306
182	HMCFY13	209628 02/12/98	Uni-ZAP XR	192	883	1	883	175	175	705	1	27	28	64
183	HMDAB56	209368 10/16/97	Uni-ZAP XR	193	1465	1	1465	273	273	706	1	32	33	44
184	HMDAM24	209226 08/28/97	Uni-ZAP XR	194	996	1	996	109	109	707	1			20
185	HMEAI48	203069 07/27/98	Lambda ZAP II	195	413	1	413	36	36	708	1	29	30	88

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
185	HMEAI48	203069 07/27/98	Lambda ZAP II	436	1168	1	1168	95	95	949	1	29	30	40
186	HMEED18	209368 10/16/97	Lambda ZAP II	196	1369	28	1369	34	34	709	1	34	35	221
187	HMEFT54	209243 09/12/97	Lambda ZAP II	197	596	1	596	332	332	710	1	19	20	39
188	HMEGF92	209243 09/12/97	Lambda ZAP II	198	629	1	611	92	92	711	1	27	28	62
189	HMSDL37	PTA-842 10/13/99	Uni-ZAP XR	199	2497	1	2497	531	531	712	1	26	27	64
189	HMSDL37	PTA-842 10/13/99	Uni-ZAP XR	437	1776	1	1776	528	528	950	1	26	27	64
189	HMSDL37	PTA-842 10/13/99	Uni-ZAP XR	438	784	1	784	565	565	951	1	6	7	26
189	HMSDL37	PTA-842 10/13/99	Uni-ZAP XR	439	699	275	427		2	952	1	1	2	50
190	HMSFI26	209368 10/16/97	Uni-ZAP XR	200	1217	1	1217	120	120	713	1	34	35	62
191	HMSGT42	97958 03/13/97 209072 05/22/97		201	1563	33	1077	40	40	714	1	32	33	92
192	HMSHM14	209126 06/19/97	Uni-ZAP XR	202	756	1	756	103	103	715	1	29	30	45
193	HMSHS36	PTA-2070 06/09/00	Uni-ZAP XR	203	1402	1	1402	134	134	716	1	23	24	103

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
193	HMSHS36	PTA-2070 06/09/00	Uni-ZAP XR	440	616	30	616	162	162	953	1	23	24	103
194	HMSKC04	203105 08/13/98	Uni-ZAP XR	204	1417	1	1417	133	133	717	1	22	23	73
195	HMUAP70	209878 05/18/98	pCMVSport 3.0	205	1965	531	1914	183	183	718	1	16	17	221
195	HMUAP70	209878 05/18/98	pCMVSport 3.0	441	1842	407	1783	413	413	954	1	25	26	103
195	HMUAP70	209878 05/18/98	pCMVSport 3.0	442	1963	530	1914	251	251	955	1	28	29	198
195	HMUAP70	209878 05/18/98	pCMVSport 3.0	443	1487	1	1487	62	62	956	1	16	17	106
195	HMUAP70	209878 05/18/98	pCMVSport 3.0	444	1653	1	1653	60	60	957	1	15	16	68
195	HMUAP70	209878 05/18/98	pCMVSport 3.0	445	1830	407	1830	60	60	958	1			23
196	HMVBS81	209628 02/12/98	pSport1	206	529	1	529	34	34	719	1	43	44	139
197	HMWDC28	209126 06/19/97	Uni-ZAP XR	207	1146	105	754	124	124	720	1	30	31	42
198	HMWFT65	209368 10/16/97	Uni-ZAP XR	208	1346	1	1346	72	72	721	1	27	28	121
199	HMWGY65	203105 08/13/98	Uni-ZAP XR	209	1974	1	1974	42	42	722	1	21	22	490
199	HMWGY65	203105 08/13/98	Uni-ZAP XR	446	2027	1	1976	42	42	959	1	21	22	188

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
200	HNEAC05	209236 09/04/97	Uni-ZAP XR	210	890	1	890	101	101	723	1	24	25	105
201	HNEEB45	PTA-845 10/13/99	Uni-ZAP XR	211	1043	1	1043	139	139	724	1	25	26	57
201	HNEEB45	PTA-845 10/13/99	Uni-ZAP XR	447	699	160	699	226	226	960	1	25	26	57
202	HNEEE24	209346 10/09/97	Uni-ZAP XR	212	1079	1	1079	213	213	725	1	21	22	71
203	HNFFC43	203027 06/26/98	Uni-ZAP XR	213	2103	209	2058	488	488	726	1	12	13	68
204	HNFIY77	209628 02/12/98	pBluescript	214	1212	28	1212	228	228	727	1	34	35	233
205	HNFJF07	209463 11/14/97	Uni-ZAP XR	215	616	1	616	86	86	728	1	21	22	66
206	HNGAK47	209368 10/16/97	Uni-ZAP XR	216	1144	1	1144	89	89	729	1	23	24	40
207	HNGBC07	PTA-844 10/13/99	Uni-ZAP XR	217	1649	1	1647	81	81	730	1	18	19	249
207	HNGBC07	PTA-844 10/13/99	Uni-ZAP XR	448	1649	1	1647	122	122	961	1	24	25	44
207	HNGBC07	PTA-844 10/13/99	Uni-ZAP XR	449	1570	1	1570	55	55	962	1	24	25	44
208	HNGDG40	209299 09/25/97	Uni-ZAP XR	218	520	1	520	13	13	731	1	36	37	127
209	HNGEP09	209197 08/08/97	Uni-ZAP XR	219	1042	1	1042	72	72	732	1	15	16	82

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
210	HNGFR31	209407 10/23/97	Uni-ZAP XR	220	536	1	536	108	108	733	1	23	24	90
211	HNGIJ31	209236 09/04/97	Uni-ZAP XR	221	796	1	796	135	135	734	1	16	17	36
212	HNGJE50	209368 10/16/97	Uni-ZAP XR	222	1037	1	1037	77	77	735	1	36	37	46
213	HNGJT54	209215 08/21/97	Uni-ZAP XR	223	1110	1	1110	172	172	736	1	19	20	34
214	HNGND37	203648 02/09/99	Uni-ZAP XR	224	841	1	841	388	388	737	1	27	28	82
215	HNGOI12	PTA-847 10/13/99	Uni-ZAP XR	225	2128	1	2128	27	27	738	1	34	35	57
215	HNGOI12	PTA-847 10/13/99	Uni-ZAP XR	450	774	1	774	27	27	963	1	34	35	57
215	HNGOI12	PTA-847 10/13/99	Uni-ZAP XR	451	1396	1	1396		596	964	1	25	26	93
216	HNGOM56	203648 02/09/99	Uni-ZAP XR	226	956	1	956	391	391	739	1	22	23	55
217	HNGOU56	203858 03/18/99	Uni-ZAP XR	227	742	1	742	317	317	740	1	23	24	59
218	HNGOW62	PTA-622 09/02/99	Uni-ZAP XR	228	1298	1	1298	167	167	741	1	19	20	54
219	HNHEU93	209628 02/12/98	Uni-ZAP XR	229	748	1	748	57	57	742	1	34	35	81
220	HNHFM14	209683 03/20/98	Uni-ZAP XR	230	297	1	297	38	38	743	1	28	29	80

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
221	HNHFO29	209138 07/03/97	Uni-ZAP XR	231	699	1	699	160	160	744	1	21	22	180
222	HNHNB29	PTA-623 09/02/99	Uni-ZAP XR	232	1894	1	1894	40	40	745	1	20	21	53
223	HNHOD46	PTA-1543 03/21/00	Uni-ZAP XR	233	1355	1	1355	12	12	746	1	20	21	80
224	HNHOG73	203570 01/11/99	Uni-ZAP XR	234	802	1	802	342	342	747	1	19	20	51
225	HNTBI26	209563 12/18/97	pCMVSport 3.0	235	1382	1	1382	28	28	748	1	35	36	320
225	HNTBI26	209563 12/18/97	pCMVSport 3.0	452	1397	1	1397	32	32	965	1	35	36	172
225	HNTBI26	209563 12/18/97	pCMVSport 3.0	453	1368	1	1368	16	16	966	1	35	36	131
226	HNTBL27	209324 10/02/97	pCMVSport 3.0	236	791	71	791	100	100	749	1	23	24	115
227	HNTCE26	PTA-1544 03/21/00	pCMVSport 3.0	237	2163	830	2163	111	111	750	1	30	31	402
227	HNTCE26	PTA-1544 03/21/00	pCMVSport 3.0	454	1763	1	1763	57	57	967	1	28	29	121
228	HNTNI01	209782 04/20/98	pSport1	238	2087	1	2087	307	307	751	1	33	34	76
228	HNTNI01	209782 04/20/98	pSport1	455	1274	1	1114	306	306	968	1	33	34	49
229	HODDF13	203069 07/27/98	Uni-ZAP XR	239	830	1	830	46	46	752	1	23	24	41

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
230	HODDN92	209012 04/28/97 209089 06/05/97	Uni-ZAP XR	240	1939	294	1939		434	753	1	26	27	35
231	HODFN71	203570 01/11/99	Uni-ZAP XR	241	1126	1	1126		1	754	1	1	2	159
231	HODFN71	203570 01/11/99	Uni-ZAP XR	456	1124	1	1124	27	27	969	1	18	19	148
232	HODGE68	203570 01/11/99	Uni-ZAP XR	242	851	1	851	87	87	755	1	26	27	59
233	HOEDB32	209628 02/12/98	Uni-ZAP XR	243	1462	73	1462	104	104	756	1	21	22	226
234	HOFMQ33	PTA-848 10/13/99	pCMVSport 2.0	244	2410	1	2410	49	49	757	1	24	25	484
234	HOFMQ33	PTA-848 10/13/99	pCMVSport 2.0	457	2409	1	2409	48	48	970	1	24	25	484
234	HOFMQ33	PTA-848 10/13/99	pCMVSport 2.0	458	876	1	876	78	78	971	1	24	25	266
234	HOFMQ33	PTA-848 10/13/99	pCMVSport 2.0	459	1586	1	1586		724	972	1			5
234	HOFMQ33	PTA-848 10/13/99	pCMVSport 2.0	460	1011	873	1011		123	973	1	1	2	84
235	HOFMT75	PTA-848 10/13/99	pCMVSport 2.0	245	2131	6	2131	83	83	758	1	20	21	410
235	HOFMT75	PTA-848 10/13/99	pCMVSport 2.0	461	427	1	427	83	83	974	1	20	21	115

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
235	HOFMT75	PTA-848 10/13/99	pCMVSport 2.0	462	1500	1	1500		1225	975	1	9	10	92
235	HOFMT75	PTA-848 10/13/99	pCMVSport 2.0	463	1234	337	1234	129	129	976	1	20	21	368
236	HOFNY91	PTA-1544 03/21/00	pCMVSport 2.0	246	2406	1	2406	64	64	759	1	14	15	82
237	HOFOC73	PTA-848 10/13/99	pCMVSport 2.0	247	1491	1	1491	18	18	760	1	18	19	129
237	HOFOC73	PTA-848 10/13/99	pCMVSport 2.0	464	1395	1	1395	23	23	977	1	18	19	67
237	HOFOC73	PTA-848 10/13/99	pCMVSport 2.0	465	270	1	270		127	978	1	4	5	14
237	HOFOC73	PTA-848 10/13/99	pCMVSport 2.0	466	2324	662	2324	142	142	979	1			6
238	HOGAW62	209463 11/14/97	pCMVSport 2.0	248	571	1	571	259	259	761	1	25	26	55
239	HOHCH55	203331 10/08/98	pCMVSport 2.0	249	2499	1	2499	221	221	762	1	23	24	494
239	HOHCH55	203331 10/08/98	pCMVSport 2.0	467	2522	1	2522	230	230	980	1	23	24	469
240	HOQBJ82	PTA-845 10/13/99	Uni-ZAP XR	250	3530	1	3530	361	361	763	1	21	22	164
240	HOQBJ82	PTA-845 10/13/99	Uni-ZAP XR	468	585	64	585	102	102	981	1	24	25	161
240	HOQBJ82	PTA-845 10/13/99	Uni-ZAP XR	469	4344	1339	1942		55	982	1	1	2	325

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
241	HOSBY40	209551 12/12/97	Uni-ZAP XR	251	1145	1	1145	89	89	764	1	30	31	56
242	HOSDJ25	209423 10/30/97	Uni-ZAP XR	252	2214	985	2214	1076	1076	765	1	18	19	40
242	HOSDJ25	209423 10/30/97	Uni-ZAP XR	470	1258	1	1258	146	146	983	1	18	19	40
243	HOSFD58	97957 03/13/97 209073 05/22/97	Uni-ZAP XR	253	2527	290	1747	56	56	766	1	30	31	624
243	HOSFD58	97957 03/13/97 209073 05/22/97	Uni-ZAP XR	471	2527	288	1747	477	477	984	1	32	33	61
244	HPDDC77	209012 04/28/97 209089 06/05/97	pBluescript SK-	254	978	1	978	51	51	767	1	29	30	131
244	HPDDC77	209012 04/28/97 209089 06/05/97	pBluescript SK-	472	2361	455	1442	510	510	985	1	29	30	131
245	HPEAD79	209244 09/12/97	Uni-ZAP XR	255	813	1	813	51	51	768	1	15	16	41
246	HPFCL43	209299 09/25/97	Uni-ZAP XR	256	665	1	665	21	21	769	1	17	18	79

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
247	HPIBO15	209563 12/18/97	Uni-ZAP XR	257	1739	1	1739	128	128	770	1	18	19	211
247	HPIBO15	209563 12/18/97	Uni-ZAP XR	473	1739	1	1739	127	127	986	1	18	19	173
248	HPICB53	PTA-846 10/13/99	Uni-ZAP XR	258	1139	1	1139	170	170	771	1	23	24	51
248	HPICB53	PTA-846 10/13/99	Uni-ZAP XR	474	438	1	438	163	163	987	1	23	24	51
249	HPJBI33	209889 05/22/98	Uni-ZAP XR	259	1677	1	1677	236	236	772	1	31	32	53
250	HPJBK12	PTA-855 10/18/99	Uni-ZAP XR	260	2648	1	2648	126	126	773	1	18	19	48
250	HPJBK12	PTA-855 10/18/99	Uni-ZAP XR	475	538	1	538	119	119	988	1	18	19	48
250	HPJBK12	PTA-855 10/18/99	Uni-ZAP XR	476	1346	1	1346		969	989	1			10
250	HPJBK12	PTA-855 10/18/99	Uni-ZAP XR	477	912	1	912	509	509	990	1			4
251	HPMDK28	209628 02/12/98	Uni-ZAP XR	261	1084	1	1084	64	64	774	1	25	26	201
251	HPMDK28	209628 02/12/98	Uni-ZAP XR	478	1177	1	1083	58	58	991	1	25	26	201
252	HPMFP40	209628 02/12/98	Uni-ZAP XR	262	1217	1	1217	37	37	775	1	24	25	44
253	HPRAL78	209195 08/01/97	Uni-ZAP XR	263	2072	1	2072	62	62	776	1	29	30	420

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
253	HPRAL78	209195 08/01/97	Uni-ZAP XR	479	1775	1038	1775	70	70	992	1	29	30	392
253	HPRAL78	209195 08/01/97	Uni-ZAP XR	480	866	128	866	148	148	993	1	42	43	63
254	HPRBC80	209852 05/07/98	Uni-ZAP XR	264	2543	1245	2543	94	94	777	1	30	31	387
254	HPRBC80	209852 05/07/98	Uni-ZAP XR	481	2052	275	2032	404	404	994	1	26	27	69
255	HPTTG19	209628 02/12/98	Uni-ZAP XR	265	559	1	559	215	215	778	1	16	17	49
256	HPZAB47	209511 12/03/97	pBluescript	266	1676	1	1676	34	34	779	1	18	19	47
257	HRAAB15	209651 03/04/98	pCMVSport 3.0	267	1747	1	1747	35	35	780	1	14	15	159
258	HRABA80	209889 05/22/98	pCMVSport 3.0	268	1251	1	1251	144	144	781	1	27	28	102
258	HRABA80	209889 05/22/98	pCMVSport 3.0	482	1237	1	1237	130	130	995	1	27	28	102
259	HRACD15	209852 05/07/98	pCMVSport 3.0	269	1539	24	1539	252	252	782	1	40	41	53
259	HRACD15	209852 05/07/98	pCMVSport 3.0	483	1681	24	1453	252	252	996	1	40	41	53
260	HRACJ35	209878 05/18/98	pCMVSport 3.0	270	2077	1	2077	132	132	783	1	24	25	472
260	HRACJ35	209878 05/18/98	pCMVSport 3.0	484	1863	8	1863	99	99	997	1	24	25	472

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
260	HRACJ35	209878 05/18/98	pCMVSport 3.0	485	1134	1	1134		1	998	1	1	2	178
261	HRDFD27	209423 10/30/97	Uni-ZAP XR	271	805	1	805	82	82	784	1	35	36	83
262	HRGBL78	PTA-841 10/13/99	Uni-ZAP XR	272	2108	1	2108	30	30	785	1	27	28	359
262	HRGBL78	PTA-841 10/13/99	Uni-ZAP XR	486	626	8	626	30	30	999	1	38	39	199
262	HRGBL78	PTA-841 10/13/99	Uni-ZAP XR	487	152	1	152		11	1000	1			2
262	HRGBL78	PTA-841 10/13/99	Uni-ZAP XR	488	1760	127	1760		1048	1001	1	10	11	32
263	HROAJ03	209423 10/30/97	Uni-ZAP XR	273	1182	1	1182	19	19	786	1	20	21	192
264	HROAJ39	PTA-2069 06/09/00	Uni-ZAP XR	274	1146	224	1146	10	10	787	1	30	31	379
264	HROAJ39	PTA-2069 06/09/00	Uni-ZAP XR	489	880	1	880	31	31	1002	1	15	16	283
264	HROAJ39	PTA-2069 06/09/00	Uni-ZAP XR	490	1106	224	1106	247	247	1003	1	15	16	286
265	HROBD68	203499 12/01/98	Uni-ZAP XR	275	1998	1	1998	122	122	788	1	22	23	48
266	HSATR82	209299 09/25/97	Uni-ZAP XR	276	777	1	777	74	74	789	1	15	16	41
267	HSAVH65	209651 03/04/98	Uni-ZAP XR	277	600	1	600	104	104	790	1	21	22	100

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268	HSAWD74	209126 06/19/97	Uni-ZAP XR	278	970	106	970	142	142	791	1	26	27	142
268	HSAWD74	209126 06/19/97	Uni-ZAP XR	491	646	1	646	122	122	1004	1	29	30	45
269	HSAWZ41	209463 11/14/97	Uni-ZAP XR	279	1388	1	1388	98	98	792	1	24	25	57
270	HSAXA83	209324 10/02/97	Uni-ZAP XR	280	649	1	649	92	92	793	1	22	23	74
271	HSAYB43	209568 01/06/98	Uni-ZAP XR	281	1699	37	1699	89	89	794	1	14	15	45
272	HSDEK49	209603 01/29/98	Uni-ZAP XR	282	1782	1	1782	60	60	795	1	19	20	399
272	HSDEK49	209603 01/29/98	Uni-ZAP XR	492	1590	96	1590	126	126	1005	1	21	22	305
273	HSDFJ26	203648 02/09/99	Uni-ZAP XR	283	1205	23	1179	99	99	796	1	20	21	223
273	HSDFJ26	203648 02/09/99	Uni-ZAP XR	493	1179	1	1179	99	99	1006	1	19	20	72
274	HSDJ82	209126 06/19/97	Uni-ZAP XR	284	462	1	462	79	79	797	1	32	33	52
275	HSDSB09	209145 07/17/97	pBluescript	285	809	1	809	16	16	798	1	17	18	135
275	HSDSB09	209145 07/17/97	pBluescript	494	819	1	819	22	22	1007	1	17	18	121
276	HSDSE75	209324 10/02/97	pBluescript	286	1151	1	1151	160	160	799	1	18	19	181

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
277	HSDZR57	209641 02/25/98	pBluescript	287	308	1	308	27	27	800	1	27	28	61
278	HSIDJ81	209551 12/12/97	Uni-ZAP XR	288	1303	1	1303	8	8	801	1	22	23	58
279	HSKDA27	PTA-322 07/09/99	Uni-ZAP XR	289	4412	1	4412	786	786	802	1	24	25	950
279	HSKDA27	PTA-322 07/09/99	Uni-ZAP XR	495	1792	134	1792	127	127	1008	1	21	22	509
279	HSKDA27	PTA-322 07/09/99	Uni-ZAP XR	496	1673	1	1673	12	12	1009	1	21	22	554
280	HSKGN81	97977 04/04/97 209082 05/29/97	pBluescript	290	1907	151	1432	353	353	803	1	23	24	260
280	HSKGN81	97977 04/04/97 209082 05/29/97	pBluescript	497	2084	335	2084	537	537	1010	1	18	19	23
281	HSLCQ82	209551 12/12/97	Uni-ZAP XR	291	1476	1	1476	226	226	804	1	28	29	84
281	HSLCQ82	209551 12/12/97	Uni-ZAP XR	498	1501	1	1501	233	233	1011	1	22	23	57
282	HSNAD72	209139 07/03/97	Uni-ZAP XR	292	861	1	861	220	220	805	1	19	20	35
283	HSNMC45	209300 09/25/97	Uni-ZAP XR	293	587	1	587	225	225	806	1	18	19	55

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
283	HSNMC45	209300 09/25/97	Uni-ZAP XR	499	720	1	720	232	232	1012	1	17	18	25
284	HSQFP66	209126 06/19/97	Uni-ZAP XR	294	477	1	477	96	96	807	1	32	33	78
285	HSRFZ57	PTA-622 09/02/99	Uni-ZAP XR	295	1930	1	1925	82	82	808	1	18	19	41
286	HSSFT08	209551 12/12/97	Uni-ZAP XR	296	791	1	791	125	125	809	1	34	35	58
287	HSSGD52	PTA-1543 03/21/00	Uni-ZAP XR	297	2425	1	2425	344	344	810	1	32	33	606
287	HSSGD52	PTA-1543 03/21/00	Uni-ZAP XR	500	2460	105	2460	338	338	1013	1	27	28	606
288	HSSGG82	209580 01/14/98	Uni-ZAP XR	298	1543	186	1543	203	203	811	1	17	18	62
289	HSUBW09	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	299	1021	1	1021	153	153	812	1	31	32	56
290	HSVBU91	209603 01/29/98	Uni-ZAP XR	300	727	1	727	256	256	813	1	18	19	90
291	HSYAV50	PTA-1544 03/21/00	pCMVSport 3.0	301	2801	1	2801	155	155	814	1	23	24	672
292	HTAEE28	PTA-843 10/13/99	Uni-ZAP XR	302	1341	1	1341	319	319	815	1	33	34	282
292	HTAEE28	PTA-843 10/13/99	Uni-ZAP XR	501	738	159	738	372	372	1014	1	33	34	122

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
292	HTAEE28	PTA-843 10/13/99	Uni-ZAP XR	502	935	1	807		124	1015	1	1	2	216
293	HTECC05	209877 05/18/98	Uni-ZAP XR	303	839	1	839	13	13	816	1	15	16	178
293	HTECC05	209877 05/18/98	Uni-ZAP XR	503	871	1	871	21	21	1016	1	15	16	127
293	HTECC05	209877 05/18/98	Uni-ZAP XR	504	881	1	881	27	27	1017	1	15	16	164
294	HTEEB42	97922 03/07/97 209070 05/22/97	Uni-ZAP XR	304	1022	20	1022	59	59	817	1	22	23	298
295	HTEFU65	209324 10/02/97	Uni-ZAP XR	305	1028	1	1028	231	231	818	1	24	25	46
296	HTEGA76	97958 03/13/97 209072 05/22/97	Uni-ZAP XR	306	450	1	450	90	90	819	1	43	44	65
297	HTELM16	203648 02/09/99	Uni-ZAP XR	307	531	1	531	121	121	820	1	21	22	84
298	HTELP17	203648 02/09/99	Uni-ZAP XR	308	808	1	808	164	164	821	1	20	21	44
299	HTELS08	PTA-1544 03/21/00	Uni-ZAP XR	309	1898	1	1898	15	15	822	1	17	18	158
300	HTEPG70	203570 01/11/99	Uni-ZAP XR	310	813	1	813	365	365	823	1	27	28	89

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Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
301	HTGEP89	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	311	703	1	703	285	285	824	1	29	30	94
302	HTHBG43	PTA-843 10/13/99	Uni-ZAP XR	312	848	1	848	47	47	825	1			39
302	HTHBG43	PTA-843 10/13/99	Uni-ZAP XR	505	632	103	632	149	149	1018	1			39
303	HTHDS25	203071 07/27/98	Uni-ZAP XR	313	1061	1	1061	70	70	826	1	15	16	90
304	HTLEP53	209641 02/25/98	Uni-ZAP XR	314	818	1	818	73	73	827	1	43	44	101
305	HTLGE31	PTA-2081 06/09/00	Uni-ZAP XR	315	534	1	534	51	51	828	1	17	18	86
306	HTLHY14	203648 02/09/99	Uni-ZAP XR	316	1032	1	1032	36	36	829	1	17	18	246
307	HTLIV19	PTA-2081 06/09/00	Uni-ZAP XR	317	978	1	978	110	110	830	1	33	34	84
308	HTOAK16	209368 10/16/97	Uni-ZAP XR	318	1466	1	1466	87	87	831	1	18	19	110
309	HTOGR42	209603 01/29/98	Uni-ZAP XR	319	1430	1	1430	14	14	832	1	18	19	56
309	HTOGR42	209603 01/29/98	Uni-ZAP XR	506	1433	1	1433	13	13	1019	1	18	19	60
310	HTOHT18	209745 04/07/98	Uni-ZAP XR	320	1499	267	1499	433	433	833	1	24	25	53

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
311	HTOIZ02	PTA-843 10/13/99	Uni-ZAP XR	321	549	1	549	243	243	834	1	16	17	50
311	HTOIZ02	PTA-843 10/13/99	Uni-ZAP XR	507	1369	746	1345		2	1020	1	1	2	240
312	HTOJK60	209324 10/02/97	Uni-ZAP XR	322	904	1	904	217	217	835	1	18	19	32
313	HTPCS72	209423 10/30/97	Uni-ZAP XR	323	3435	2141	3431	2365	2365	836	1	29	30	71
313	HTPCS72	209423 10/30/97	Uni-ZAP XR	508	1598	306	1598	530	530	1021	1	29	30	71
314	HTPIH83	PTA-871 10/26/99	Uni-ZAP XR	324	1481	1	1481	118	118	837	1	24	25	230
314	HTPIH83	PTA-871 10/26/99	Uni-ZAP XR	509	530	1	530	111	111	1022	1	24	25	140
314	HTPIH83	PTA-871 10/26/99	Uni-ZAP XR	510	1046	359	1046		96	1023	1	1	2	86
315	HTSEW17	209138 07/03/97	pBluescript	325	652	1	652	170	170	838	1	34	35	37
316	HTTBI76	209641 02/25/98	Uni-ZAP XR	326	1711	1	1711	133	133	839	1	22	23	133
317	HTTBS64	PTA-841 10/13/99	Uni-ZAP XR	327	2058	1	2058	95	95	840	1	17	18	42
317	HTTBS64	PTA-841 10/13/99	Uni-ZAP XR	511	819	1	819	100	100	1024	1	17	18	42
317	HTTBS64	PTA-841 10/13/99	Uni-ZAP XR	512	501	1	501		175	1025	1	1	2	76

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
318	HTWDF76	209852 05/07/98	pSport1	328	963	1	963	316	316	841	1	24	25	85
319	HTXCV12	209423 10/30/97	Uni-ZAP XR	329	1134	1	1134	175	175	842	1	27	28	102
319	HTXCV12	209423 10/30/97	Uni-ZAP XR	513	1162	1	1162	183	183	1026	1	27	28	91
320	HTXFL30	209603 01/29/98	Uni-ZAP XR	330	1991	1	1991	30	30	843	1	39	40	102
321	HTXJM03	209580 01/14/98	Uni-ZAP XR	331	2398	211	2398	328	328	844	1	18	19	56
322	HTXON32	203648 02/09/99	Uni-ZAP XR	332	1505	1	1505	72	72	845	1	22	23	52
323	HUFBY15	PTA-1543 03/21/00	pSport1	333	1193	1	1193	49	49	846	1	26	27	159
323	HUFBY15	PTA-1543 03/21/00	pSport1	514	1012	1	1012	74	74	1027	1	26	27	145
324	HUFCJ30	209641 02/25/98	pSport1	334	868	1	868	123	123	847	1	29	30	50
325	HUKAH51	209568 01/06/98	Lambda ZAP II	335	853	1	853	286	286	848	1	20	21	151
325	HUKAH51	209568 01/06/98	Lambda ZAP II	515	754	1	754	144	144	1028	1	22	23	142
325	HUKAH51	209568 01/06/98	Lambda ZAP II	516	667	1	667	55	55	1029	1	22	23	119
326	HUSXS50	209651 03/04/98	pSport1	336	2561	1	2561	280	280	849	1	19	20	522

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
326	HUSXS50	209651 03/04/98	pSport1	517	2025	1098	1997	281	281	1030	1	30	31	462
326	HUSXS50	209651 03/04/98	pSport1	518	1020	1	1020	179	179	1031	1	23	24	174
327	HUVEB53	209603 01/29/98	Uni-ZAP XR	337	1502	1	1502	14	14	850	1	20	21	45
328	HWAAD63	203570 01/11/99	pCMVSport 3.0	338	3308	1	3308	322	322	851	1	30	31	168
328	HWAAD63	203570 01/11/99	pCMVSport 3.0	519	3306	1	3306	322	322	1032	1	30	31	53
328	HWAAD63	203570 01/11/99	pCMVSport 3.0	520	2194	1	2194	312	312	1033	1	30	31	169
329	HWABY10	203071 07/27/98	pCMVSport 3.0	339	2950	78	2914	263	263	852	1	22	23	168
330	HWADJ89	PTA-1543 03/21/00	pCMVSport 3.0	340	1769	529	1769	581	581	853	1	1	2	43
331	HWBCB89	PTA-499 08/11/99	pCMVSport 3.0	341	1317	3	1317	37	37	854	1	19	20	187
331	HWBCB89	PTA-499 08/11/99	pCMVSport 3.0	521	1315	1	1315	35	35	1034	1	19	20	187
332	HWBFX31	PTA-1543 03/21/00	pCMVSport 3.0	342	1677	1	1677	271	271	855	1	1	2	52
333	HWDAH38	PTA-868 10/26/99	pCMVSport 3.0	343	1604	1	1604	255	255	856	1	20	21	40
333	HWDAH38	PTA-868 10/26/99	pCMVSport 3.0	522	796	1	796	319	319	1035	1	20	21	40

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
334	HWHGZ51	PTA-499 08/11/99	pCMVSport 3.0	344	1699	1	1699	33	33	857	1	30	31	346
335	HWLIH65	203081 07/30/98	pSport1	345	831	1	831	129	129	858	1	18	19	165
336	HTEAM34	PTA-623 09/02/99	Uni-ZAP XR	346	801	87	801	136	136	859	1	28	29	122
336	HTEAM34	PTA-623 09/02/99	Uni-ZAP XR	523	734	1	734	63	63	1036	1	28	29	122
337	HTEJN13	97958 03/13/97 209072 05/22/97	Uni-ZAP XR	347	1094	1	1094	156	156	863	1	15	16	208

Table 1B (Comprised of Tables 1B.1 and 1B.2)

        The first column in Table 1B.1 and Table 1B.2 provides the gene number in the application corresponding to the clone identifier. The second column in Table 1B.1 and Table 1B.2 provides a unique "Clone ID:" for the cDNA clone related to each contig sequence disclosed in Table

5   1B.1 and Table 1B.2. This clone ID references the cDNA clone which contains at least the 5' most sequence of the assembled contig and at least a portion of SEQ ID NO:X as determined by directly sequencing the referenced clone. The referenced clone may have more sequence than described in the sequence listing or the clone may have less. In the vast majority of cases, however, the clone is believed to encode a full-length polypeptide. In the case where a clone is not full-length, a full-length

10   cDNA can be obtained by methods described elsewhere herein. The third column in Table 1B.1 and Table 1B.2 provides a unique "Contig ID" identification for each contig sequence. The fourth column in Table 1B.1 and Table 1B.2 provides the "SEQ ID NO:" identifier for each of the contig polynucleotide sequences disclosed in Table 1B.

Table 1B.1

15   The fifth column in Table 1B.1, "ORF (From-To)", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence "SEQ ID NO:X" that delineate the preferred open reading frame (ORF) shown in the sequence listing and referenced in Table 1B.1, column 6, as SEQ ID NO:Y. Where the nucleotide position number "To" is lower than the nucleotide position number "From", the preferred ORF is the reverse complement of the referenced polynucleotide sequence.

20   The sixth column in Table 1B.1 provides the corresponding SEQ ID NO:Y for the polypeptide sequence encoded by the preferred ORF delineated in column 5. In one embodiment, the invention provides an amino acid sequence comprising, or alternatively consisting of, a polypeptide encoded by the portion of SEQ ID NO:X delineated by "ORF (From-To)".. Also provided are polynucleotides encoding such amino acid sequences and the complementary strand thereto. Column 7 in Table 1B.1

25   lists residues comprising epitopes contained in the polypeptides encoded by the preferred ORF (SEQ ID NO:Y), as predicted using the algorithm of Jameson and Wolf, (1988) Comp. Appl. Biosci. 4:181-186. The Jameson-Wolf antigenic analysis was performed using the computer program PROTEAN (Version 3.11 for the Power MacIntosh, DNASTAR, Inc., 1228 South Park Street Madison, WI). In specific embodiments, polypeptides of the invention comprise, or alternatively consist of, at least one,

30   two, three, four, five or more of the predicted epitopes as described in Table 1B. It will be appreciated that depending on the analytical criteria used to predict antigenic determinants, the exact address of the determinant may vary slightly. Column 8 of Table 1B.1 ("Tissue Distribution") is described below in Table 1B.2 Column 5. Column 9 of Table 1B.1 ("Cytologic Band") provides the chromosomal location of polynucleotides corresponding to SEQ ID NO:X. Chromosomal location

was determined by finding exact matches to EST and cDNA sequences contained in the NCBI (National Center for Biotechnology Information) UniGene database.

It will be appreciated that depending on the analytical criteria used to predict antigenic determinants, the exact address of the determinant may vary slightly.

5   A modified version of the computer program BLASTN (Altshul, et al., J. Mol. Biol. 215:403-410 (1990), and Gish, and States, Nat. Genet. 3:266-272) (1993) was used to search the UniGene database for EST or cDNA sequences that contain exact or near-exact matches to a polynucleotide sequence of the invention (the 'Query'). A sequence from the UniGene database (the 'Subject') was said to be an exact match if it contained a segment of 50 nucleotides in length such that

10   48 of those nucleotides were in the same order as found in the Query sequence. If all of the matches that met this criteria were in the same UniGene cluster, and mapping data was available for this cluster, it is indicated in Table 1B under the heading "Cytologic Band". Where a cluster had been further localized to a distinct cytologic band, that band is disclosed; where no banding information was available, but the gene had been localized to a single chromosome, the chromosome is disclosed.

15   Once a presumptive chromosomal location was determined for a polynucleotide of the invention, an associated disease locus was identified by comparison with a database of diseases which have been experimentally associated with genetic loci. The database used was the Morbid Map, derived from OMIM™ and National Center for Biotechnology Information, National Library of Medicine (Bethesda, MD) 2000;. If the putative chromosomal location of a polynucleotide of the

20   invention (Query sequence) was associated with a disease in the Morbid Map database, an OMIM reference identification number was noted in column 9, Table 1B.1, labelled "OMIM Disease Reference(s). Table 5 is a key to the OMIM reference identification numbers (column 1), and provides a description of the associated disease in Column 2.

Table 1B.2

25   Column 5, in Table 1B.2, provides an expression profile and library code:count for each of the contig sequences (SEQ ID NO:X) disclosed in Table 1B, which can routinely be combined with the information provided in Table 4 and used to determine the tissues, cells, and/or cell line libraries which predominantly express the polynucleotides of the invention. The first number in Table 1B.2, column 5 (preceding the colon), represents the tissue/cell source identifier code corresponding to the

30   code and description provided in Table 4. The second number in column 5 (following the colon) represents the number of times a sequence corresponding to the reference polynucleotide sequence was identified in the corresponding tissue/cell source. Those tissue/cell source identifier codes in which the first two letters are "AR" designate information generated using DNA array technology. Utilizing this technology, cDNAs were amplified by PCR and then transferred, in duplicate, onto the

90

array. Gene expression was assayed through hybridization of first strand cDNA probes to the DNA array. cDNA probes were generated from total RNA extracted from a variety of different tissues and cell lines. Probe synthesis was performed in the presence of ^{33}P dCTP, using oligo (dT) to prime reverse transcription. After hybridization, high stringency washing conditions were employed to

5   remove non-specific hybrids from the array. The remaining signal, emanating from each gene target, was measured using a Phosphorimager. Gene expression was reported as Phosphor Stimulating Luminescence (PSL) which reflects the level of phosphor signal generated from the probe hybridized to each of the gene targets represented on the array. A local background signal subtraction was performed before the total signal generated from each array was used to normalize gene expression

10   between the different hybridizations. The value presented after "[array code]:" represents the mean of the duplicate values, following background subtraction and probe normalization. One of skill in the art could routinely use this information to identify normal and/or diseased tissue(s) which show a predominant expression pattern of the corresponding polynucleotide of the invention or to identify polynucleotides which show predominant and/or specific tissue and/or cell expression.

15

TABLE 1B.1

Gene No:	cDNA Clone ID	Contig ID:	SEQ ID NO: X	ORF (From-To)	AA SEQ ID NO: Y	Predicted Epitopes	Tissue Distribution Library code: count (see Table IV for Library Codes)	Cytologic Band	OMIM Disease Reference(s):
1	H2CBU83	884134	11	157 - 777	527	Pro-62 to Asp-67, Arg-74 to Gly-80, Gln-146 to Glu-168.	S0414: 9, S0422: 7, L0662: 7, S0444: 6, L0748: 4, L0581: 4, S0442: 3, H0031: 3, L0666: 3, L0754: 3, H0656: 2, S0358: 2, S0360: 2, H0013: 2, S0438: 2, S0440: 2, L0598: 2, L0803: 2, L0540: 2, L0756: 2, L0752: 2, L0758: 2, L0759: 2, S0242: 2, H0624: 1, S0282: 1, H0742: 1, H0393: 1, H0586: 1, H0574: 1, H0036: 1, H0004: 1, T0103: 1, T0110: 1, H0571: 1, H0569: 1, H0123: 1, L0471: 1, H0594: 1, S6028: 1, H0622: 1, UNKWN: 1, L0649: 1, L0381: 1, L0776: 1, L0659: 1, L0528: 1, L0792: 1,		

#							
2	H2CBU83	745366	348	157 - 312	864		L0793: 1, L0663: 1, L0664: 1, L0665: 1, L2257: 1, H0144: 1, S0374: 1, H0547: 1, H0593: 1, H0690: 1, H0670: 1, H0648: 1, H0672: 1, H0651: 1, H0539: 1, S0378: 1, S0380: 1, H0521: 1, S0406: 1, H0555: 1, H0478: 1, L0744: 1, L0731: 1 and S0276: 1.
	H2MAC30	544957	12	157 - 375	528	Pro-54 to Gly-67.	L0766: 16, L0743: 11, H0692: 8, L0769: 7, L0518: 6, L0748: 6, L0771: 4, L0745: 4, L0779: 4, H0265: 3, S0358: 3, H0494: 3, L0755: 3, L3814: 2, H0550: 2, H0486: 2, H0581: 2, H0135: 2, L0761: 2, L0804: 2, L0774: 2, L0438: 2, L0777: 2, H0685: 1, S0114: 1, H0583: 1, S0116: 1, S0212: 1, H0254: 1, S0408: 1, S0476: 1, H0772: 1, T0104: 1, H0586: 1,

| 3 | H6EDC19 | 543259 | 13 | 389 - 733 | 529 | Arg-5 to Pro-12. | H0587: 1, H0331: 1, T0109: 1, H0599: 1, L0738: 1, H0150: 1, H0012: 1, H0264: 1, S0438: 1, L0770: 1, L0374: 1, L0764: 1, L0768: 1, L0803: 1, L0653: 1, L0776: 1, L0788: 1, L0792: 1, L0663: 1, S0428: 1, S0053: 1, S0216: 1, H0783: 1, L3811: 1, S0152: 1, H0522: 1, H0555: 1, S0432: 1, L0744: 1, L0751: 1, L0749: 1, L0756: 1, L0758: 1, S0436: 1, L0601: 1, H0543: 1, H0423: 1, S0424: 1 and H0506: 1. | L0805: 4, H0559: 3, L0803: 3, H0545: 2, L0664: 2, L0748: 2, L0777: 2, L0758: 2, L3643: 1, H0295: 1, H0657: 1, S0444: 1, H0734: 1, H0550: 1, S0222: 1, T0048: 1, H0318: 1, H0052: 1, H0231: 1, H0041: 1, |

4	HACBD91	637482	14	117 - 266	H0620: 1, H0606: 1, H0316: 1, H0077: 1, L0769: 1, L0761: 1, L0766: 1, L0774: 1, L0789: 1, H0672: 1, H0539: 1, S0146: 1, L0751: 1, L0780: 1, L0731: 1, S0434: 1 and S0196: 1.
				530	L0748: 8, L0439: 4, L0749: 3, H0171: 2, L3659: 2, L0438: 2, S6024: 1, S0360: 1, H0640: 1, S0278: 1, L3655: 1, S0280: 1, H0012: 1, L0055: 1, H0032: 1, H0647: 1, L0807: 1, L0665: 1, H0659: 1, L0355: 1, S0328: 1, H0754: 1, H0710: 1, L0756: 1, L0780: 1, L0759: 1, S0260: 1, S0452: 1 and H0721: 1.
5	HAGAQ26	561996	15	251 - 439	
				531	L0603: 4, H0031: 3, S0010: 2, T0010: 2, H0644: 2, L0438: 2, H0038: 1, H0616: 1, H0264: 1, S0426: 1, H0539: 1, L0439: 1 and

6	HAGBZ81	456414	16	65 - 214	532	Ile-40 to Lys-45.	S0260: 1.
7	HAGDG59	534165	17	124 - 1026	533	Lys-29 to Val-34, Cys-94 to Asp-99, Ser-102 to Val-107, Gln-133 to Lys-139.	S6026: 1, S0010: 1, H0399: 1, L0435: 1, L0438: 1 and S0031: 1. S0422: 22, S0408: 9, L0659: 9, S0438: 8, S0354: 6, L0754: 6, S0126: 5, H0543: 5, S0358: 4, S0444: 4, S0406: 4, H0436: 4, L0740: 4, L0777: 4, H0144: 3, S0374: 3, L0750: 3, L0599: 3, H0170: 2, H0717: 2, H0740: 2, S0360: 2, S0410: 2, H0747: 2, H0749: 2, H0587: 2, H0574: 2, H0486: 2, H0575: 2, H0036: 2, S0003: 2, H0622: 2, L0475: 2, H0509: 2, L0667: 2, L0771: 2, L0662: 2, L0766: 2, L0804: 2, L0809: 2, L0790: 2, L3667: 2, H0710: 2, L0748: 2, L0745: 2, L0749: 2, L0731: 2, S0026: 2, H0422: 2, H0171: 1, H0686: 1, S 0040: 1,

H0716: 1, L0785: 1,
L2991: 1, S0212: 1,
L0946: 1, S0442: 1,
L1446: 1, H0393: 1,
L0717: 1, H0441: 1,
H0497: 1, H0427: 1,
H0590: 1, S0346: 1,
S0474: 1, H0581: 1,
H0746: 1, H0050: 1,
H0239: 1, H0510: 1,
H0266: 1, H0553: 1,
H0169: 1, H0264: 1,
H0494: 1, S0450: 1,
S0440: 1, H0654: 1,
H0652: 1, S0344: 1,
H0529: 1, H0026: 1,
L0371: 1, L0372: 1,
L0764: 1, L0521: 1,
L0768: 1, L0649: 1,
L0652: 1, L0653: 1,
L0661: 1, L0367: 1,
L0663: 1, L0665: 1,
S0428: 1, L2258: 1,
L2260: 1, H0699: 1,
H0547: 1, H0670: 1,
H0660: 1, S0330: 1,
S0378: 1, H0518: 1,
H0521: 1, H0522: 1,
S0028: 1, L0744: 1,
L0439: 1, L0751: 1,

#	Name	ID		Range		Description	Details
							S0031: 1, S0260: 1, L0581: 1, L0362: 1, H0136: 1, S0276: 1, H0506: 1 and H0721: 1.
8	HAGDS35	1352199	18	45 - 410	534	Leu-31 to Phe-38, Glu-47 to Trp-52.	L0748: 8, L0777: 5, H0013: 3, S0356: 2, H0622: 2, L0794: 2, L0803: 2, L0665: 2, L0438: 2, H0436: 2, L0743: 2, L0740: 2, H0170: 1, S0354: 1, S0376: 1, H0749: 1, H0586: 1, S0010: 1, S6028: 1, H0188: 1, H0616: 1, S0422: 1, L0764: 1, L0521: 1, L0804: 1, L0774: 1, L0776: 1, L0655: 1, L0659: 1, L5623: 1, H0520: 1, H0435: 1, L0439: 1, L0754: 1, L0747: 1, L0779: 1, L0758: 1, L0759: 1, S0026: 1, H0543: 1 and H0423: 1.
	HAGDS35	543617	349	52 - 405	865	Leu-31 to Phe-38, Glu-47 to Trp-52.	S0010: 1
9	HAGFG51	823509	19	163 - 294	535	Cys-36 to Gly-43.	H0657: 1, S0212: 1,
10	HAIBO71	490848	20	325 - 525	536		S0360: 1, S0132: 1,

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11	HAIFL18	676933	21	274 - 693	537	Glu-28 to Gly-45, Ser-63 to Gly-69, Gln-96 to Trp-104, Gly-112 to Pro-117, Arg-121 to Pro-128.	H0265: 1, H0159: 1, S0132: 1, H0574: 1, H0075: 1, T0042: 1, H0509: 1 and S0434: 1.
12	HAJAF57	823516	22	43 - 324	538	Cys-25 to Ile-31, Cys-85 to Asn-91.	H0561: 1
13	HAJAN23	1352364	23	109 - 1797	539	Pro-186 to Tyr-196, Leu-294 to Leu-300, Ser-380 to Thr-385, Thr-486 to Ser-499, Phe-513 to Ser-522.	S0408: 2, H0619: 2, S0438: 2, L0803: 2, L0804: 2, L3643: 1, H0686: 1, H0650: 1, H0730: 1, T0110: 1, H0233: 1, S0003: 1, H0674: 1, H0623: 1, H0561: 1, H0509: 1, S0422: 1, L0770: 1, L0766: 1, L0518: 1, L5622: 1, S0374: 1, H0593: 1, H0555: 1, L0748: 1 and L0755: 1.
	HAJAN23	872551	350	120 - 629	866		
14	HAJBR69	638516	24	262 - 423	540		S0040: 4, T0010: 4, H0560: 4, L0794: 4, S0420: 3, L0455: 3, L3905: 3, H0656: 2, S0212: 2, H0619: 2,

H0628: 1, L0766: 1, L0803: 1, L0776: 1, H0539: 1, L0731: 1 and H0422: 1.

| 15 | HAMFE15 | 905695 | 25 | 1495 - 2757 | 541 | Leu-8 to Thr-16, Gly-93 to Ala-105, Arg-136 to Thr-142, Lys-195 to Gln-200, Lys-241 to His-247, Gly-255 to Gln-270, Gln-288 to Leu-293, | H0497: 2, H0052: 2, H0012: 2, H0429: 2, L0766: 2, L5623: 2, L0439: 2, H0665: 2, H0556: 1, H0717: 1, H0650: 1, S0418: 1, H0580: 1, H0728: 1, H0735: 1, H0734: 1, H0370: 1, H0392: 1, H0333: 1, H0013: 1, H0635: 1, H0505: 1, H0581: 1, H0569: 1, H0050: 1, H0373: 1, S0250: 1, S0022: 1, H0553: 1, L0370: 1, H0561: 1, L2263: 1, L2261: 1, H0520: 1, H0593: 1, S0126: 1, H0435: 1, H0518: 1, H0521: 1, H0626: 1, L0748: 1, S0436: 1, L0591: 1, H0542: 1, S0424: 1 and H0677: 1. L0748: 10, L0754: 9, L0731: 9, L0766: 8, L0439: 7, L0803: 6, H0624: 5, L0759: 5, S0356: 4, H0486: 4, H0090: 4, L0789: 4, L0438: 4, L0740: 4, |

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| Thr-316 to Asp-328, Gly-348 to Pro-355, Asp-408 to Met-415. | L0749: 4, L0756: 4, L0777: 4, L0599: 4, S0360: 3, H0013: 3, S0003: 3, L0369: 3, L0794: 3, L0659: 3, L0809: 3, L0665: 3, H0539: 3, L0362: 3, S0114: 2, S0358: 2, S0278: 2, H0441: 2, H0586: 2, H0333: 2, H0581: 2, H0328: 2, H0553: 2, H0529: 2, L0770: 2, L0662: 2, L0804: 2, L0666: 2, L0663: 2, H0547: 2, H0519: 2, H0659: 2, H0670: 2, S0330: 2, L0747: 2, L0750: 2, L0755: 2, L0758: 2, L0589: 2, L0592: 2, L0581: 2, L0593: 2, S0276: 2, S0424: 2, H0170: 1, H0171: 1, S0040: 1, S0116: 1, H0664: 1, H0458: 1, H0638: 1, H0192: 1, S0418: 1, S0354: 1, S0410: 1, H0580: 1, S0046: 1, H0393: 1, L0717: 1, H0411: 1, |

S6022: 1, S0222: 1,
H0587: 1, T0114: 1,
L0021: 1, H0318: 1,
H0421: 1, H0052: 1,
H0251: 1, H0544: 1,
H0572: 1, H0566: 1,
L0471: 1, H0057: 1,
H0051: 1, H0510: 1,
S6028: 1, H0271: 1,
S0334: 1, H0622: 1,
S0368: 1, H0031: 1,
L0142: 1, H0032: 1,
H0124: 1, H0316: 1,
H0591: 1, H0616: 1,
L0060: 1, H0551: 1,
H0264: 1, H0412: 1,
H0413: 1, L0564: 1,
H0560: 1, S0150: 1,
H0646: 1, S0144: 1,
H0538: 1, L0598: 1,
L0638: 1, L0372: 1,
L0764: 1, L0771: 1,
L0521: 1, L0650: 1,
L0805: 1, L0655: 1,
L0656: 1, L0664: 1,
H0144: 1, S0374: 1,
H0691: 1, H0520: 1,
H0689: 1, H0658: 1,
H0672: 1, S0152: 1,
S0332: 1, H0521: 1,

No.							
16	HAMFE15	823350	351	226 - 369	867		H0134: 1, H0631: 1, S0206: 1, L0751: 1, L0779: 1, L0753: 1, H0445: 1, S0394: 1, L0608: 1, S0026: 1, H0653: 1, H0665: 1, S0242: 1, S0194: 1, H0542: 1, H0423: 1 and H0422: 1.
	HAMGG68	731859	26	312 - 479	542	Ser-39 to Asn-47.	L0805: 7, L0666: 3, L0439: 3, H0052: 2, L0773: 2, L0794: 2, L0740: 2, L0779: 2, H0685: 1, S0418: 1, L3388: 1, S0222: 1, H0050: 1, H0320: 1, H0252: 1, H0030: 1, H0059: 1, H0560: 1, H0773: 1, L3815: 1, L0520: 1, L0770: 1, L0646: 1, L0771: 1, L0662: 1, L0363: 1, L0803: 1, L0774: 1, L0375: 1, L0776: 1, L0655: 1, L0659: 1, H0670: 1, S0378: 1, H0753: 1, S0406: 1, L0748: 1, L0757: 1, L0758: 1, S 0436: 1,

17	HAMGR28	892971	27	98 - 823	543	Ala-27 to Asp-34, Tyr-116 to Leu-125.	L0597: 1, L0591: 1, L0366: 1 and S0412: 1.
							L0666: 11, H0046: 9, H0556: 5, L0809: 5, L0747: 4, L0770: 3, L0769: 3, L0783: 3, H0520: 3, L0439: 3, L0731: 3, H0664: 2, S0045: 2, H0123: 2, H0424: 2, L0637: 2, L0775: 2, S0328: 2, S0146: 2, L0777: 2, L0601: 2, H0542: 2, L0411: 1, H0265: 1, H0740: 1, H0294: 1, H0583: 1, H0650: 1, H0662: 1, S0420: 1, S0444: 1, H0637: 1, H0735: 1, S0476: 1, S0278: 1, H0370: 1, H0586: 1, H0587: 1, H0497: 1, H0486: 1, H0013: 1, H0069: 1, H0575: 1, H0253: 1, H0581: 1, H0251: 1, H0150: 1, T0010: 1, H0083: 1, H0239: 1, H0594: 1, H0288: 1, H0290: 1, H0604: 1, H0553: 1, H0040: 1,

	HAMGR28	748223	352	40 - 651	868	Ala-27 to Asp-34, Tyr-116 to Leu-125, Arg-185 to Cys-194.	H0087: 1, H0494: 1, H0560: 1, L0065: 1, S0438: 1, S0440: 1, H0641: 1, H0633: 1, H0646: 1, L3815: 1, S0422: 1, S0002: 1, H0529: 1, L0763: 1, L0646: 1, L0800: 1, L0764: 1, L0767: 1, L0649: 1, L0803: 1, L0806: 1, L0653: 1, L0659: 1, L0518: 1, L0789: 1, L0791: 1, S0053: 1, H0144: 1, H0701: 1, H0725: 1, S0148: 1, L0438: 1, H0519: 1, H0593: 1, S0406: 1, L0748: 1, L0745: 1, L0749: 1, L0750: 1, L0779: 1, L0752: 1, L0758: 1, S0031: 1, S0436: 1, S0460: 1 and L0600: 1.
18	HAPOM49	769555	28	251 - 817	544	Gln-23 to Asp-30, Lys-66 to Cys-87.	S0406: 5, L0750: 5, L0777: 4, L0749: 3, L0779: 3, H0662: 2, L0770: 2, S0440: 2,

	HAPOM49	722386	353	448 - 816	869	Met-1 to Cys-21, Cys-41 to Asp-59, Pro-104 to His-116.	L0794: 2, L0776: 2, L0657: 2, L0783: 2, L0740: 2, L0747: 2, L0780: 2, S0420: 1, S0442: 1, S0444: 1, S0045: 1, L3316: 1, H0599: 1, H0575: 1, S0474: 1, T0115: 1, H0083: 1, H0510: 1, H0644: 1, H0551: 1, S0386: 1, H0494: 1, H0561: 1, H0538: 1, S0422: 1, L0646: 1, L0804: 1, L0774: 1, L0809: 1, L0530: 1, L0663: 1, L0664: 1, L0665: 1, H0593: 1, S0380: 1, S0027: 1, L0748: 1, L0439: 1, L0756: 1, L0755: 1, L0758: 1, L0485: 1, H0542: 1 and H0423: 1.
19	HAPPW30	1352278	29	59 - 850	545	Glu-42 to Pro-53, Ser-67 to Tyr-79, Phe-137 to Leu-143, Ser-180 to Arg-186, Trp-188 to Gly-195,	L0748: 12, S0474: 5, L0777: 5, L0758: 5, H0424: 4, H0038: 4, L0752: 4, L0774: 3, L0742: 3, L0779: 3,

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| HAPPW30 | 684272 | 354 | 54 - 329 | 870 | Glu-42 to Pro-53,
L0755: 3, H0616: 2,
L0770: 2, L0764: 2,
L0776: 2, H0539: 2,
L0753: 2, L0599: 2,
H0663: 1, H0722: 1,
H0728: 1, H0208: 1,
S0045: 1, L3388: 1,
L3484: 1, L3491: 1,
T0040: 1, H0575: 1,
S0010: 1, S0049: 1,
H0052: 1, H0545: 1,
H0009: 1, H0103: 1,
H0012: 1, L0163: 1,
H0266: 1, H0188: 1,
H0292: 1, H0213: 1,
H0169: 1, H0388: 1,
H0708: 1, H0135: 1,
H0412: 1, T0041: 1,
T0042: 1, H0538: 1,
L0769: 1, L0638: 1,
L0772: 1, L0767: 1,
L0775: 1, L0809: 1,
L0665: 1, L2263: 1,
H0547: 1, H0672: 1,
H0521: 1, S0392: 1,
S0027: 1, L0747: 1,
L0786: 1, L0731: 1,
L0757: 1, L0759: 1,
L0591: 1 and H0653: 1. | Pro-210 to Arg-216,
Thr-222 to Asp-243. |

20	HATBR65	635514	30	252 - 446	546	Ser-67 to Thr-73, Ala-84 to Leu-90.	Ile-25 to Trp-30.	L0534: 4, L0562: 3, L0527: 3, H0254: 2, S0045: 2, H0156: 2, L0589: 2, H0255: 1, H0402: 1, L0539: 1, T0060: 1, H0328: 1, H0615: 1, H0598: 1, H0264: 1, L0766: 1, L0493: 1, L0666: 1, S0052: 1, H0539: 1, L0747: 1, L0752: 1 and L0366: 1.
21	HATCB92	603948	31	247 - 417	547	Arg-49 to Gln-56.		H0156: 1
22	HATEE46	565618	32	241 - 402	548			L0731: 3, L0662: 2, S0212: 1, S0418: 1, S0358: 1, H0734: 1, H0411: 1, H0486: 1, H0156: 1, H0266: 1, S0022: 1, H0551: 1, T0041: 1, L0640: 1, L0641: 1, L0804: 1, L0805: 1, L0776: 1, L0659: 1, L0517: 1, L0790: 1, H0520: 1, S0126: 1, S3014: 1, L0740: 1, L0747: 1, L0750: 1, L0756: 1, L0752: 1, L0759: 1,

	Name	ID		Range		Amino acids	Codes	
23	HAUAI83	639009	33	253 - 399	549	Asn-34 to Lys-42.	L0599: 1 and S0026: 1.	
	HAUAI83	383592	355	575 - 643	871	Ala-17 to Lys-23.	H0294: 2	19
24	HBAMB15	671835	34	390 - 569	550		H0410: 1, H0530: 1, H0328: 1, L0455: 1 and L0740: 1.	
25	HBGBA69	1352289	35	124 - 843	551	Pro-51 to Asp-56, Gly-95 to Thr-105, Val-132 to Ala-138, Pro-229 to Leu-240.	S0474: 13, L0747: 7, S0410: 6, H0617: 5, L0777: 5, H0618: 4, H0521: 4, H0661: 3, H0663: 3, S0360: 3, H0052: 3, H0545: 3, H0038: 3, L0766: 3, S0380: 3, L0740: 3, L0751: 3, L0757: 3, H0653: 3, S0358: 2, H0733: 2, L0717: 2, S0278: 2, H0318: 2, H0309: 2, H0327: 2, H0150: 2, H0687: 2, H0181: 2, H0413: 2, H0509: 2, L0769: 2, L0764: 2, L0771: 2, L0662: 2, L0768: 2, L0774: 2, L0776: 2, L5622: 2, L0666: 2, L0663: 2, L2261: 2, S0126: 2, H0658: 2, S0406: 2, L0744: 2, L0758: 2, L0588: 2,	

L3643: 1, S0342: 1,
H0713: 1, H0740: 1,
T0049: 1, H0657: 1,
S0116: 1, S0282: 1,
H0255: 1, H0402: 1,
H0638: 1, S0418: 1,
S0420: 1, S0442: 1,
S0444: 1, S0408: 1,
H0730: 1, H0741: 1,
H0735: 1, H0776: 1,
S0300: 1, L3388: 1,
H0370: 1, H0592: 1,
H0643: 1, L0623: 1,
H0156: 1, L0021: 1,
H0253: 1, H0263: 1,
L0738: 1, H0530: 1,
H0571: 1, H0081: 1,
H0578: 1, H0083: 1,
H0266: 1, H0039: 1,
H0604: 1, H0031: 1,
H0616: 1, H0087: 1,
T0004: 1, H0494: 1,
S0438: 1, S0142: 1,
H0743: 1, H0529: 1,
L0763: 1, L0796: 1,
L0761: 1, L0645: 1,
L0773: 1, L0364: 1,
L0561: 1, L0650: 1,
L0651: 1, L0653: 1,
L0655: 1, L0661: 1,

26	HBGBA69	709658	356	62 - 244	872	Thr-52 to Gly-57.	L0629: 1, L0657: 1, L0658: 1, L4469: 1, L2258: 1, H0725: 1, H0519: 1, H0670: 1, H0672: 1, H0518: 1, S0044: 1, H0555: 1, H0436: 1, S3014: 1, L0439: 1, L0749: 1, L0731: 1, L0759: 1, S0260: 1, H0445: 1, S0434: 1, S0196: 1, H0423: 1 and H0506: 1.
	HBIAE26	514418	36	75 - 194	552	Ser-22 to Lys-27.	S0049: 1 and S0146: 1.
27	HBINS58	1352386	37	57 - 578	553	Gly-32 to Gly-37, Glu-78 to His-87, Tyr-102 to Ala-107, Pro-115 to Val-122, Lys-164 to Tyr-170.	H0593: 2, H0617: 1, L0657: 1 and L0592: 1.
	HBINS58	961712	357	71 - 592	873	Gly-32 to Gly-37, Glu-78 to His-87, Tyr-102 to Ala-107, Pro-115 to Val-122, Lys-164 to Gln-171.	
	HBINS58	892924	358	100 - 732	874	Gly-32 to Gly-37, Glu-78 to His-87, Tyr-102 to Ala-107, Pro-115 to Val-122.	
28	HBJNC59	1125802	38	66 - 803	554	Pro-29 to Gly-46, Lys-48 to Gly-55,	H0521: 26, H0522: 16, S0360: 13, H0255: 7,

Lys-67 to Gly-80, Lys-100 to Pro-115, Arg-121 to Gly-127, Asn-139 to Gly-149, Ser-179 to Arg-185, Asp-191 to Gly-196, Lys-219 to Gly-224.	L0775: 7, S0374: 6, H0445: 6, S0408: 5, H0581: 5, L0768: 5, S0404: 5, H0638: 4, H0427: 4, H0575: 4, H0617: 4, L0767: 4, L0806: 4, H0587: 3, H0042: 3, H0124: 3, H0087: 3, S0438: 3, L0659: 3, H0672: 3, L0749: 3, H0506: 3, S0116: 2, H0254: 2, H0661: 2, S0358: 2, S0376: 2, H0637: 2, L3071: 2, S0280: 2, H0706: 2, H0120: 2, H0318: 2, H0327: 2, H0045: 2, H0424: 2, H0100: 2, S0440: 2, H0649: 2, L0769: 2, L0774: 2, L0776: 2, L0657: 2, L0547: 2, L0783: 2, S0292: 2, H0555: 2, L0754: 2, L0747: 2, L0750: 2, L0777: 2, S0436: 2, L0603: 2, H0717: 1, H0716: 1, H0583: 1, H0663: 1, S0356: 1, S0444: 1, L3649: 1,

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| HBJNC59 | 899397 | 359 | 66 - 365 | 875 | H0741: 1, L2831: 1, L3388: 1, H0411: 1, S6022: 1, H0550: 1, H0455: 1, H0602: 1, H0632: 1, T0082: 1, H0309: 1, H0009: 1, H0015: 1, H0510: 1, H0375: 1, H0687: 1, H0039: 1, H0030: 1, H0031: 1, S0294: 1, H0509: 1, H0641: 1, H0647: 1, H0538: 1, L0762: 1, L0763: 1, L5565: 1, L0772: 1, L0644: 1, L0648: 1, L0385: 1, L0375: 1, L0651: 1, L0378: 1, L0653: 1, L0655: 1, L0629: 1, L0636: 1, L0540: 1, L0545: 1, H0689: 1, S0380: 1, S0332: 1, S0044: 1, S0406: 1, L0755: 1, S0260: 1, S0434: 1, H0653: 1, L2367: 1 and H0352: 1. | Pro-29 to Gly-46, Lys-48 to Gly-55, Lys-67 to Gly-80, Gly-89 to Asn-99. |

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#	ID						
	HBJNC59	902207	360	64 - 801	876	Pro-29 to Gly-46, Lys-48 to Gly-55, Lys-67 to Gly-80, Lys-100 to Pro-115, Arg-121 to Gly-127, Asn-139 to Gly-149, Ser-179 to Arg-185, Asp-191 to Gly-196, Lys-219 to Gly-224.	
29	HBNAW17	526797	39	77 - 262	555		L0766: 3 and H0188: 1.
30	HBOEG69	793786	40	302 - 466	556		L0771: 4, H0556: 3, S0007: 3, L0766: 3, L0493: 3, L0748: 3, H0265: 2, S0418: 2, H0271: 2, H0422: 2, S0402: 1, H0657: 1, H0656: 1, H0580: 1, L0463: 1, H0592: 1, H0427: 1, H0156: 1, H0390: 1, H0581: 1, H0194: 1, H0596: 1, H0373: 1, H0687: 1, H0615: 1, S0364: 1, H0413: 1, H0649: 1, S0422: 1, L0457: 1, L0502: 1, L0763: 1, L0776: 1, S0428: 1, H0658: 1, H0670: 1, S0330: 1, L0602: 1,

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31	HCACU58	625923	41	137 - 388	557		H0696: 1, H0436: 1, L0754: 1, L0750: 1, L0780: 1 and S0424: 1. H0341: 1, H0125: 1, H0580: 1, L0747: 1 and L0749: 1.
32	HCE2F54	634016	42	166 - 1125	558	His-44 to Pro-50, Glu-90 to Glu-96, Gln-111 to Glu-117, Ser-143 to Gly-151, Ala-154 to Leu-166, Pro-199 to Ala-216, Gly-264 to Asp-272.	H0052: 9, L0794: 6, L0758: 6, L0659: 5, L0666: 4, L0438: 4, S0126: 4, L0754: 4, L0779: 4, H0617: 3, L0748: 3, L0751: 3, L0759: 3, H0333: 2, H0013: 2, H0150: 2, H0494: 2, L0761: 2, L0641: 2, L0649: 2, L0809: 2, L0519: 2, L0663: 2, S0380: 2, L3832: 2, L0439: 2, L0747: 2, L0749: 2, H0685: 1, H0713: 1, H0295: 1, H0341: 1, H0484: 1, H0255: 1, H0638: 1, S0358: 1, S0046: 1, S0476: 1, H0393: 1, L3388: 1, H0261: 1, S0222: 1, H0592: 1, H0069: 1, H0253: 1, H0596: 1, H0009: 1, H0178: 1,

| 33 | HCE3G69 | 728432 | 43 | 165 - 1175 | 559 | Lys-50 to Asp-66, Pro-68 to Glu-77, Glu-102 to Glu-107, Glu-131 to Leu-146, Ala-175 to Glu-183, Phe-205 to Lys-216, Val-263 to Thr-281, Pro-304 to Ala-313. | H0081: 1, H0051: 1, H0266: 1, H0428: 1, H0100: 1, S0112: 1, L0639: 1, L5575: 1, L3905: 1, L0662: 1, L0766: 1, L0804: 1, L0651: 1, L0655: 1, L0787: 1, L0664: 1, L0665: 1, T0068: 1, H0672: 1, H0539: 1, L0602: 1, S0406: 1, H0436: 1, H0478: 1, L0777: 1, L0755: 1, H0422: 1 and H0506: 1. | L0439: 9, H0052: 7, L0748: 7, S0440: 5, L0758: 5, H0046: 4, L0769: 4, H0038: 4, S0442: 3, H0013: 3, H0253: 3, T0010: 3, L0774: 3, L0776: 3, H0144: 3, H0521: 3, S0404: 3, L0752: 3, L0731: 3, H0656: 2, S0358: 2, S0360: 2, S0222: 2, H0618: 2, H0620: 2, L0351: 2, S0422: 2, L0764: 2, L0771: 2, L0783: 2, L0793: 2, H0658: 2, | 2 |

H0666: 2, L0751: 2,
L0754: 2, L0745: 2,
L0747: 2, L0750: 2,
H0624: 1, H0265: 1,
H0556: 1, H0686: 1,
S0134: 1, S0212: 1,
S0001: 1, H0254: 1,
H0661: 1, L0946: 1,
S0354: 1, S0444: 1,
S0408: 1, H0734: 1,
L3081: 1, S0300: 1,
S0278: 1, H0369: 1,
H0370: 1, H0333: 1,
H0574: 1, H0486: 1,
H0036: 1, H0263: 1,
H0597: 1, H0545: 1,
H0572: 1, H0024: 1,
S0388: 1, S0051: 1,
S0250: 1, H0252: 1,
H0428: 1, H0039: 1,
H0644: 1, L0055: 1,
H0674: 1, H0135: 1,
H0087: 1, T0067: 1,
H0488: 1, L3154: 1,
H0529: 1, L0763: 1,
L0770: 1, L3905: 1,
L0761: 1, L0374: 1,
L0662: 1, L0768: 1,
L0766: 1, L0803: 1,
L0775: 1, L0805: 1,

| 34 | HCE3G69 | 494346 | 361 | 165 - 482 | 877 | Lys-50 to Leu-69. | L0653: 1, L0661: 1, L0526: 1, L5622: 1, L0666: 1, L0664: 1, L0665: 1, S0053: 1, L0710: 1, L2654: 1, H0547: 1, H0682: 1, H0435: 1, H0670: 1, H0660: 1, H0648: 1, H0672: 1, S0328: 1, H0539: 1, S0152: 1, H0696: 1, S0044: 1, S0406: 1, H0631: 1, S3014: 1, S0028: 1, L0742: 1, L0749: 1, L0753: 1, L0759: 1, S0436: 1, S0011: 1, S0192: 1, H0542: 1, H0423: 1, S0398: 1 and H0506: 1. |
| | HCE5F43 | 612796 | 44 | 113 - 931 | 560 | Asn-23 to Ser-32, Trp-61 to Ser-68, Ala-130 to Ala-135, Thr-141 to Gly-148, Asn-176 to Gly-182, Pro-197 to Glu-205, His-211 to Glu-222, Gln-242 to Ile-248, Thr-265 to Leu-271. | L0777: 10, L0756: 4, S0414: 3, L0659: 3, L0740: 3, H0441: 2, S0003: 2, H0616: 2, L0766: 2, H0144: 2, L0439: 2, L0780: 2, L0759: 2, L0596: 2, S0242: 2, H0542: 2, S0470: 1, S0342: 1, H0341: 1, S0001: 1, |

35	HCEFB80	1143407	45	12 - 281	561	Met-1 to Ala-8, Ser-51 to Leu-62, Pro-70 to Lys-78.	S0282: 1, S0408: 1, S0007: 1, T0060: 1, H0427: 1, H0098: 1, H0042: 1, H0581: 1, S0049: 1, H0052: 1, H0024: 1, H0051: 1, H0647: 1, S0422: 1, L0770: 1, L0769: 1, L0772: 1, L0662: 1, L0794: 1, L0803: 1, L0805: 1, L0666: 1, L0663: 1, L0664: 1, S0374: 1, S0126: 1, H0648: 1, H0696: 1, L0747: 1, L0752: 1, L0755: 1 and L0591: 1.	H0052: 6, L0439: 5, L0794: 3, L0748: 3, L0415: 2, H0661: 2, H0559: 2, S0049: 2, H0327: 2, S0051: 2, H0399: 2, S0036: 2, L0351: 2, L0770: 2, H0144: 2, L0758: 2, L0759: 2, S0116: 2, S0110: 1, H0637: 1, H0261: 1, S0222: 1, H0438: 1, H0013: 1, H0569: 1, H0320: 1, S0422: 1, H0529: 1,	22

36	HCEFB80	1046853	362	5 - 274	878	Met-1 to Ala-8.	L0638: 1, L0517: 1, L0438: 1, S0126: 1, L0749: 1, L0756: 1 and L0592: 1.
	HCENK38	658737	46	10 - 168	562	Tyr-30 to Ser-40.	L0747: 15, L0745: 12, L0746: 12, L0754: 9, L0439: 6, S0007: 5, L0740: 5, L0779: 5, H0616: 4, L0768: 4, L0659: 4, L0663: 4, H0013: 3, L0766: 3, H0144: 3, L0731: 3, L0758: 3, H0556: 2, S0132: 2, S0010: 2, H0052: 2, L0471: 2, H0014: 2, H0031: 2, L0806: 2, L0518: 2, L0666: 2, L0665: 2, H0547: 2, L0748: 2, L0750: 2, L0757: 2, L0592: 2, H0423: 2, H0624: 1, L3643: 1, S0116: 1, H0663: 1, H0449: 1, S0420: 1, L0005: 1, S0360: 1, S0046: 1, H0749: 1, H0619: 1, H0411: 1, H0587: 1, H0485: 1, L3653: 1, L0021: 1,

S0474: 1, H0581: 1,
S0049: 1, H0046: 1,
H0050: 1, H0242: 1,
H0024: 1, L0163: 1,
S0388: 1, H0328: 1,
H0615: 1, H0039: 1,
H0644: 1, S0366: 1,
H0135: 1, H0090: 1,
H0040: 1, H0412: 1,
H0102: 1, H0100: 1,
L0564: 1, S0440: 1,
H0131: 1, H0633: 1,
L0769: 1, L0638: 1,
L0667: 1, L0764: 1,
L0771: 1, L0521: 1,
L0649: 1, L0774: 1,
L0775: 1, L0523: 1,
L0776: 1, L0655: 1,
L0527: 1, L0636: 1,
L0519: 1, S0053: 1,
L0438: 1, L0352: 1,
H0520: 1, H0689: 1,
H0690: 1, H0658: 1,
H0660: 1, H0648: 1,
H0710: 1, S0350: 1,
S0044: 1, S0146: 1,
H0436: 1, L0611: 1,
L0749: 1, L0786: 1,
S0436: 1, L0362: 1,
L0366: 1, S0026: 1,

37	HCEWE20	543370	47	166 - 321	563		H0667: 1, H0542: 1 and H0422: 1.
							H0052: 2, H0261: 1, H0271: 1 and S0458: 1.
38	HCFNN01	430297	48	254 - 385	564	Ser-17 to Gln-22.	L0754: 7, L0438: 4, L0794: 3, S0356: 1, L3655: 1, S0010: 1, L0646: 1, L0352: 1, L0780: 1, H0542: 1 and H0423: 1.
39	HCGMD59	636078	49	438 - 662	565		L0748: 6, L0750: 4, S0386: 3, L0439: 3, L0777: 3, H0624: 2, H0052: 2, L0435: 2, L0598: 2, L0809: 2, L0751: 2, L0747: 2, L0756: 2, L0753: 2, L0731: 2, H0422: 2, L0718: 2, H0265: 1, H0381: 1, H0459: 1, S0356: 1, S0360: 1, H0619: 1, H0393: 1, H0411: 1, H0050: 1, L0455: 1, H0412: 1, S0344: 1, L0769: 1, L0638: 1, L0764: 1, L0771: 1, L0803: 1, L0804: 1, L0805: 1, L0776: 1, L0438: 1, H0689: 1, H0659: 1,

| 40 | HCHNF25 | 1352270 | 50 | 1130 - 1636 | 566 | Val-34 to Leu-39, Ser-64 to Cys-74, Ser-86 to Lys-94, Gln-133 to Asn-143, Pro-160 to Asp-169. | L0514: 16, L0500: 13, L0777: 11, L0499: 10, L0755: 10, L0769: 8, L0493: 8, L0747: 8, L0749: 7, L0766: 6, L0748: 6, S0360: 5, L0497: 5, L0508: 5, H0457: 4, L0507: 4, L0770: 4, L0805: 4, S0374: 4, H0659: 4, L0779: 4, L0596: 4, L0588: 4, S0356: 3, S0358: 3, S0438: 3, S0440: 3, S0422: 3, L0505: 3, L0761: 3, L0646: 3, L0771: 3, L0498: 3, L0803: 3, L0774: 3, L0775: 3, L0776: 3, L0655: 3, L0513: 3, L0659: 3, L0666: 3, L0751: 3, L0758: 3, L0759: 3, H0580: 2, H0431: 2, H0251: 2, H0529: 2, L0504: 2, L0506: 2, L0373: 2, L0764: 2, L0649: 2, L0650: 2, | H0658: 1, H0660: 1, H0666: 1, L0594: 1 and S0106: 1. |

L0375: 2, L0651: 2, L0512: 2, L0663: 2, L0665: 2, L0710: 2, S0126: 2, H0689: 2, S0330: 2, L0750: 2, L0752: 2, S0434: 2, L0591: 2, L0608: 2, H0170: 1, T0002: 1, H0685: 1, S0040: 1, H0294: 1, S0134: 1, L0785: 1, H0484: 1, L3659: 1, H0637: 1, H0592: 1, L0623: 1, H0486: 1, H0421: 1, H0052: 1, H0150: 1, H0510: 1, H0375: 1, S0316: 1, H0687: 1, H0252: 1, H0606: 1, H0169: 1, T0067: 1, H0412: 1, S0038: 1, L0351: 1, H0509: 1, L0796: 1, L0800: 1, L0642: 1, L0374: 1, L0765: 1, L0773: 1, L0388: 1, L0376: 1, L0784: 1, L0806: 1, L0509: 1, L0653: 1, L0807: 1, L0782: 1, L0809: 1, L0543: 1, L0788: 1, L2260: 1,

	HCHNF25	658672	363	180 - 623	879	Val-34 to Leu-39, Ser-64 to Cys-74, Ser-86 to Ser-95, Arg-128 to Ala-136.	L2261: 1, H0144: 1, H0690: 1, H0658: 1, H0648: 1, S0378: 1, S0380: 1, H0696: 1, S0406: 1, S3014: 1, L0740: 1, L0754: 1, L0756: 1, L0753: 1, L0731: 1, L0757: 1, H0445: 1, S0436: 1, L0590: 1, H0542: 1 and H0543: 1.
41	HCNDR47	1016919	51	21 - 401	567	Pro-71 to His-92.	L0794: 3, L0764: 2, L0439: 2, H0052: 1, H0597: 1, T0006: 1, L0766: 1, H0648: 1, S0330: 1 and L0753: 1.
	HCNDR47	863677	364	124 - 507	880	Pro-71 to His-92.	
	HCNDR47	874128	365	603 - 632	881	Leu-1 to Thr-9.	
42	HCNSB61	526413	52	218 - 349	568	Pro-26 to Asn-32.	H0231: 1 and S0216: 1.
43	HCNSM70	637547	53	107 - 751	569	Met-1 to Ser-6.	L0748: 5, H0046: 2, H0012: 2, H0620: 2, L0804: 2, L0747: 2, H0624: 1, H0662: 1, S0356: 1, S0358: 1, H0602: 1, H0592: 1, H0013: 1, H0042: 1,

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44	HCNSM70	589445	366	161 - 436	882		T0110: 1, H0231: 1, H0622: 1, H0264: 1, H0494: 1, L0771: 1, L0666: 1, S0374: 1, H0693: 1, H0593: 1, H0670: 1, H0672: 1, L0749: 1, L0779: 1, L0758: 1, L0596: 1 and H0506: 1.
	HCUCK44	720291	54	593 - 772	570	Met-1 to Ser-6.	L3450: 19, H0271: 18, S0002: 12, L0794: 12, S0144: 8, L3783: 8, L3807: 8, H0250: 7, L0777: 7, L3119: 6, L3729: 6, L0665: 6, H0518: 6, S0132: 5, H0264: 5, S0426: 5, S0328: 5, S0330: 5, L0758: 5, S0444: 4, S0344: 4, L0770: 4, L0776: 4, L0659: 4, S0052: 4, S0053: 4, L0743: 4, L0747: 4, S0436: 4, L0065: 3, L0769: 3, L0766: 3, L0774: 3, L0657: 3, H0521: 3, L0748: 3, L0749: 3, L0731: 3, L2999: 2, H0306: 2,

H0402: 2, H0638: 2,
S0360: 2, S0408: 2,
S0476: 2, H0393: 2,
S0278: 2, L3516: 2,
H0050: 2, H0014: 2,
H0416: 2, H0617: 2,
H0634: 2, H0494: 2,
S0440: 2, L0800: 2,
L0771: 2, L0648: 2,
L0549: 2, L0806: 2,
L0805: 2, L0666: 2,
S0428: 2, S0216: 2,
L3210: 2, S0404: 2,
L0439: 2, L0740: 2,
L0750: 2, L0752: 2,
L0596: 2, L0599: 2,
T0002: 1, H0159: 1,
H0650: 1, H0657: 1,
L0785: 1, H0662: 1,
L3659: 1, S0442: 1,
S0358: 1, S0410: 1,
L3646: 1, H0741: 1,
L3117: 1, H0619: 1,
L2791: 1, H0613: 1,
H0600: 1, H0592: 1,
H0486: 1, L2504: 1,
L3750: 1, H0069: 1,
H0581: 1, H0596: 1,
H0044: 1, H0009: 1,
H0024: 1, H0057: 1,

S0051: 1, H0355: 1, H0615: 1, L0483: 1, S0036: 1, H0090: 1, H0038: 1, H0087: 1, H0413: 1, H0100: 1, S0448: 1, S0142: 1, S0210: 1, H0529: 1, L3904: 1, L0761: 1, L0772: 1, L0372: 1, L0646: 1, L0645: 1, L0764: 1, L0773: 1, L0662: 1, L0768: 1, L0387: 1, L0649: 1, L0551: 1, L0550: 1, L0803: 1, L0775: 1, L0653: 1, L0655: 1, L0656: 1, L0782: 1, L0787: 1, L4537: 1, L2257: 1, S0374: 1, H0690: 1, H0659: 1, H0658: 1, S0378: 1, H0710: 1, S0152: 1, H0696: 1, H0704: 1, S0406: 1, H0436: 1, L0744: 1, L0756: 1, L0779: 1, L0780: 1, L0755: 1, L0759: 1, S0031: 1, L0581: 1, L0601: 1, L0603: 1, S0196: 1, L3632: 1 and

45	HCUEO60	499242	55	102 - 296	571		H0352: 1.
46	HCUHK65	651313	56	80 - 319	572	Met-24 to Gly-29, Ala-57 to Thr-63.	H0402: 1
							H0543: 18, S0414: 11, L0438: 6, S0412: 6, L0747: 5, L0439: 4, L0750: 4, L0779: 4, L0759: 4, L0592: 4, H0156: 3, L0758: 3, H0423: 3, H0402: 2, H0251: 2, L0770: 2, L0809: 2, L0777: 2, H0542: 2, H0422: 2, H0624: 1, H0170: 1, S0114: 1, S0420: 1, S0007: 1, S6026: 1, H0351: 1, S6016: 1, H0013: 1, L0021: 1, H0575: 1, S0346: 1, L0157: 1, T0010: 1, H0354: 1, S6028: 1, S0036: 1, H0038: 1, L3905: 1, L0794: 1, L0804: 1, L0787: 1, L0666: 1, H0658: 1 and L0742: 1.
	HCUHK65	880178	367	770 - 2893	883	Glu-124 to Leu-131, Asp-266 to Pro-271, Asn-273 to Phe-280, Glu-315 to Arg-321, Pro-400 to Val-407,	

| 47 | HCUIM65 | 550208 | 57 | 557 - 700 | 573 | Ala-446 to Pro-452, Thr-487 to Gly-492, Phe-517 to Gly-523, Tyr-599 to Lys-605, Thr-611 to Thr-626, Met-653 to Gly-658, Ala-686 to Thr-692. | L0789: 4, L0809: 2, L0759: 2, L0596: 2, H0306: 1, H0402: 1, H0580: 1, H0550: 1, H0370: 1, H0404: 1, H0559: 1, H0486: 1, H0031: 1, H0674: 1, H0135: 1, H0100: 1, L0800: 1, L0794: 1, L0804: 1, L0805: 1, L0515: 1, L0783: 1, H0672: 1, L0777: 1, H0444: 1 and H0352: 1. | 19p13.3 | 108725, 109480, 111250, 120700, 130130, 130130, 133171, 136836, 145981, 147141, 147840, 164953, 181800, 188070, 277600, 600957, 601238, 601240, 601768, 601846, 602018, 602216, 602216, |

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| 48 | HCWDS72 | 707833 | 58 | 19 - 318 | 574 | L0752: 30, L0754: 17, L0740: 16, H0521: 14, L0439: 14, L0766: 12, S0003: 11, S0214: 11, L0777: 10, S0002: 8, L0770: 8, L0776: 8, L0748: 8, L0755: 8, S0360: 7, L0665: 7, L0757: 7, T0067: 6, S0440: 6, L0666: 6, L0747: 6, L0774: 5, L0751: 5, S0222: 4, H0575: 4, H0622: 4, L0662: 4, L0775: 4, H0547: 4, S0126: 4, S0380: 4, L0750: 4, L0758: 4, S0436: 4, L0362: 4, H0638: 3, H0580: 3, H0494: 3, S0422: 3, L0598: 3, S0374: 3, H0710: 3, H0522: 3, H0555: 3, L0356: 3, L0756: 3, L0780: 3, L0731: 3, L0759: 3, L0594: 3, S0134: 2, S0376: 2, S0046: 2, H0393: 2, | 602216, 602477, 605248 |

S0278: 2, H0438: 2,
H0586: 2, L2477: 2,
H0156: 2, S0474: 2,
H0581: 2, H0421: 2,
T0110: 2, L0471: 2,
S6028: 2, S0022: 2,
H0090: 2, H0591: 2,
H0040: 2, H0551: 2,
H0412: 2, L0520: 2,
L0764: 2, L0768: 2,
L0803: 2, L0655: 2,
L0807: 2, L0659: 2,
L0664: 2, L0438: 2,
H0648: 2, H0672: 2,
S0406: 2, S0028: 2,
L0588: 2, L0599: 2,
H0667: 2, S0196: 2,
H0624: 1, H0171: 1,
H0265: 1, S0040: 1,
H0713: 1, S0114: 1,
L0811: 1, H0341: 1,
S0212: 1, S0001: 1,
H0661: 1, H0305: 1,
S0418: 1, L3649: 1,
H0741: 1, S0045: 1,
H0747: 1, S0132: 1,
S0476: 1, L3089: 1,
H0619: 1, H0415: 1,
H0409: 1, L1942: 1,
L2495: 1, L3655: 1,

| H0013: 1, S0010: 1, |
| S0665: 1, H0327: 1, |
| H0046: 1, L0157: 1, |
| S0051: 1, T0010: 1, |
| H0266: 1, H0179: 1, |
| H0615: 1, H0096: 1, |
| H0031: 1, H0553: 1, |
| L0055: 1, H0674: 1, |
| H0163: 1, H0038: 1, |
| H0264: 1, H0413: 1, |
| L0564: 1, H0560: 1, |
| H0359: 1, H0509: 1, |
| S0142: 1, S0344: 1, |
| UNKWN: 1, L0369: 1, |
| L0762: 1, L0371: 1, |
| L0796: 1, L0761: 1, |
| L0373: 1, L0773: 1, |
| L0521: 1, L0794: 1, |
| L0804: 1, L0784: 1, |
| L0518: 1, L0783: 1, |
| L0647: 1, L5622: 1, |
| L5623: 1, L3391: 1, |
| L2657: 1, L2262: 1, |
| L3636: 1, H0144: 1, |
| H0684: 1, H0659: 1, |
| H0658: 1, S0330: 1, |
| S0152: 1, H0696: 1, |
| S0404: 1, S0037: 1, |
| L0746: 1, L0779: 1, |
| S0031: 1, H0707: 1, |

49	HCWGU37	1042325	59	194 - 226	575		H0589: 60, S0042: 29, H0402: 3, H0305: 3, L0770: 2, S0052: 2, L0744: 2, L0740: 2, H0438: 1, H0051: 1, S0038: 1, S0386: 1, H0521: 1, L0743: 1, L0779: 1 and L0366: 1.	13,15,16,19,2, 3,4,5
							S0434: 1, L0480: 1, L0608: 1, L0604: 1, S0011: 1, S0192: 1, S0456: 1 and H0506: 1.	
	HCWGU37	901913	368	187 - 219	884			
50	HCWKC15	553621	60	37 - 159	576	Lys-28 to Thr-34.	H0305: 2 and H0589: 1.	
51	HCWLD74	628256	61	138 - 335	577		H0305: 3 and H0589: 1.	
52	HDHEB60	499233	62	568 - 894	578	Asp-48 to Ser-54.	H0265: 2, S0442: 2, S0360: 2, H0581: 2, H0052: 2, H0570: 2, H0087: 2, L0439: 2, H0445: 2, H0650: 1, S0354: 1, H0580: 1, H0741: 1, H0586: 1, H0559: 1, H0486: 1, L0021: 1, H0618: 1, H0009: 1, H0571: 1, S0051: 1, S0368: 1, H0553: 1, H0181: 1, H0551: 1, S0294: 1,	

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53	HDLAC10	692299	63	132 - 377	579

L0766: 4, L0438: 4,
H0038: 3, L0666: 3,
L0777: 3, H0445: 3,
H0624: 2, H0170: 2,
H0341: 2, S0212: 2,
H0661: 2, S0003: 2,
H0615: 2, H0031: 2,
H0068: 2, L0804: 2,
H0519: 2, H0555: 2,
L0743: 2, L0745: 2,
L0779: 2, L0411: 1,
H0171: 1, S0342: 1,
S0134: 1, S0218: 1,
H0650: 1, H0657: 1,
L0005: 1, S0358: 1,
S0360: 1, S0007: 1,
S0046: 1, H0550: 1,
H0586: 1, H0485: 1,
H0486: 1, T0060: 1,
H0599: 1, H0318: 1,
H0581: 1, H0320: 1,
H0373: 1, H0266: 1,
S0214: 1, H0328: 1,

L3905: 1, L0646: 1,
L0764: 1, L0662: 1,
L0794: 1, L0658: 1,
L0659: 1, L0665: 1,
H0547: 1, H0682: 1,
H0684: 1, H0670: 1 and
S3014: 1.

| 54 | HDPBA28 | 1062783 | 64 | 259 - 3084 | 580 | Gln-33 to Trp-49, Gly-161 to Gly-172, Ile-207 to Arg-212, Asn-414 to Val-419, Val-423 to Gln-428, Val-436 to Gly-441, Lys-467 to Leu-478, Phe-497 to Ser-508, Met-550 to Gly-560, Glu-688 to Thr-697, Ile-711 to Gly-720, Ala-747 to Gly-759, | H0428: 1, S0366: 1, H0551: 1, T0067: 1, H0494: 1, S0002: 1, H0529: 1, L0638: 1, L0761: 1, L0667: 1, L0374: 1, L0764: 1, L0803: 1, L0655: 1, L0606: 1, L0635: 1, L0665: 1, S0374: 1, H0690: 1, H0658: 1, H0672: 1, H0539: 1, H0518: 1, S0406: 1, S0028: 1, L0439: 1, L0755: 1, L0759: 1, S0308: 1, L0599: 1, S0026: 1, H0667: 1, H0543: 1, H0423: 1 and H0422: 1. |
| | | | | | | | H0521: 4, L0454: 2, S0442: 2, L0758: 2, H0720: 1, H0255: 1, S0376: 1, H0486: 1, H0581: 1, H0373: 1, H0268: 1, S0440: 1, L0763: 1, L0803: 1, H0435: 1, H0658: 1, L3833: 1, H0522: 1, L0748: 1, L0749: 1, L0588: 1 and H0543: 1. |

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						Leu-785 to Phe-791, Ser-795 to Gln-800, Thr-808 to Lys-813, Ser-821 to Phe-832, Thr-879 to Glu-889, Leu-898 to Gln-904, Gln-934 to Met-941.	
	HDPBA28	866429	369	69 - 2894	885	Gln-33 to Trp-49, Gly-161 to Gly-172, Ile-207 to Arg-212, Asn-414 to Val-419, Val-423 to Gln-428, Val-436 to Gly-441, Lys-467 to Leu-478, Phe-497 to Ser-508, Met-550 to Gly-560, Glu-688 to Thr-697, Ile-711 to Gly-720, Ala-747 to Gly-759, Leu-785 to Phe-791, Ser-795 to Gln-800.	
55	HDPBQ71	1160316	65	93 - 1928	581	Leu-56 to Thr-62, Gln-80 to Pro-87, Gly-106 to Gln-113, Pro-122 to Lys-127, Gln-138 to Asn-146, Cys-280 to Lys-287, Asp-306 to Gly-311, Asp-321 to Thr-326, Gly-337 to Pro-345,	L0439: 8, H0551: 5, L0754: 5, L0777: 5, H0624: 4, L0666: 4, L0438: 4, L0748: 4, L0759: 4, L0471: 3, H0031: 3, S0422: 3, L0774: 3, H0521: 3, L0779: 3, S0222: 2, H0156: 2, H0373: 2,

Thr-354 to Gln-359, Asn-451 to Ile-457, Lys-526 to Glu-532, Gln-591 to Glu-603.	H0038: 2, T0067: 2, H0494: 2, L0649: 2, L0776: 2, H0547: 2, H0539: 2, H0696: 2, L0756: 2, L0755: 2, L0731: 2, L0757: 2, L0592: 2, H0170: 1, H0171: 1, H0556: 1, S0116: 1, H0341: 1, H0661: 1, H0662: 1, L3658: 1, H0125: 1, S0420: 1, S0442: 1, S0354: 1, S0444: 1, S0408: 1, H0580: 1, H0208: 1, S0132: 1, H0645: 1, L2738: 1, L3484: 1, S6016: 1, L2518: 1, H0013: 1, H0427: 1, H0706: 1, H0510: 1, H0375: 1, S0250: 1, S0003: 1, H0615: 1, S0036: 1, H0163: 1, H0090: 1, H0616: 1, H0412: 1, L0564: 1, L0065: 1, S0438: 1, H0633: 1, S0344: 1, S0002: 1, L0640: 1, L0803: 1, L0775: 1, L0807: 1, L0659: 1, L0663: 1,

					L0665: 1, L2259: 1, L3811: 1, S0126: 1, H0711: 1, H0658: 1, S0328: 1, S0380: 1, S0406: 1, S0392: 1, S0390: 1, S0037: 1, S0028: 1, L0751: 1, L0747: 1, L0749: 1, L0758: 1, L0599: 1, L0603: 1, L0366: 1, S0011: 1, S0242: 1, S0194: 1, H0542: 1, H0423: 1, L3352: 1, L3562: 1 and H0506: 1.
HDPBQ71	727200	370	24 - 1859	886	Leu-56 to Thr-62, Gln-80 to Pro-87, Gly-106 to Gln-113, Pro-122 to Lys-127, Gln-138 to Asn-146.
HDPBQ71	886067	371	165 - 1535	887	Leu-56 to Thr-62, Gln-80 to Pro-87, Gly-106 to Gln-113, Pro-122 to Lys-127, Gln-138 to Asn-146, Cys-280 to Lys-287, Asp-306 to Gly-311, Asp-321 to Thr-326, Gly-337 to Pro-345, Thr-354 to Gln-359, Asn-451 to Arg-456.

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| 56 | HDPCL63 | 1019008 | 66 | 35 - 835 | 582 | Ile-4 to Glu-10, Gly-58 to Asp-64. | L0751: 8, L0439: 6, L0659: 5, L0438: 4, L0744: 4, L0754: 4, L0777: 4, S0046: 3, H0052: 3, H0009: 3, H0271: 3, L0662: 3, L0665: 3, L0747: 3, H0740: 2, S0358: 2, H0586: 2, H0251: 2, H0100: 2, L3905: 2, L0794: 2, L0803: 2, L0809: 2, H0519: 2, S0126: 2, L0749: 2, L0731: 2, L0757: 2, L0605: 2, H0170: 1, H0717: 1, H0295: 1, H0294: 1, L0785: 1, S0116: 1, H0483: 1, L3659: 1, S0418: 1, H0742: 1, H0735: 1, S0045: 1, H0619: 1, H0550: 1, H0370: 1, H0592: 1, H0574: 1, H0427: 1, H0599: 1, T0082: 1, S0010: 1, S0049: 1, H0544: 1, H0545: 1, H0570: 1, H0051: 1, S0388: 1, H0356: 1, H0399: 1, H0266: 1, H0622: 1, |

HDPCL63	847045	372	260 - 733	888		L0194: 1, H0135: 1, H0412: 1, H0623: 1, H0059: 1, L0351: 1, T0042: 1, H0561: 1, S0294: 1, L0640: 1, L4747: 1, L5575: 1, L5565: 1, L0800: 1, L0764: 1, L0648: 1, L0768: 1, L0774: 1, L0776: 1, L0657: 1, L0559: 1, L0519: 1, L0789: 1, L0792: 1, L0666: 1, L0664: 1, L0709: 1, L3811: 1, H0520: 1, H0547: 1, S0328: 1, S0378: 1, H0754: 1, S0152: 1, H0521: 1, S0190: 1, S0406: 1, H0436: 1, L0748: 1, L0780: 1, L0759: 1, L0601: 1, L0366: 1 and H0423: 1.
HDPCL63	897484	373	605 - 961	889	Lys-72 to Cys-80, Leu-90 to Pro-96, Ala-110 to Thr-119, Glu-121 to Gly-128, Ser-140 to Lys-147.	Pro-8 to Gln-13, Thr-38 to Pro-46, Pro-100 to Met-108,

57	HDPCO25	460682	67	182 - 343	583	Pro-113 to Pro-118.	H0521: 2, H0445: 2, H0394: 1, H0747: 1, H0581: 1, L0761: 1 and L0750: 1.
58	HDPFF39	588697	68	175 - 765	584	Pro-22 to His-33, Ser-42 to Trp-48.	H0556: 1, H0255: 1, H0391: 1, S0049: 1, H0553: 1, L0455: 1, H0264: 1, H0561: 1, H0539: 1, H0521: 1, H0522: 1, L0748: 1 and S0424: 1.
59	HDPFP29	628254	69	293 - 451	585	Ser-128 to Thr-133, Thr-158 to Thr-166, Leu-168 to Gly-175, Ala-179 to Asp-196.	S0474: 6, L0766: 6, L0662: 4, L0748: 4, H0556: 3, L0387: 3, L0659: 3, L0779: 3, H0255: 2, H0402: 2, S0360: 2, S0408: 2, S0410: 2, H0309: 2, H0591: 2, H0087: 2, L0764: 2, L0809: 2, L0666: 2, L0663: 2, H0648: 2, L0751: 2, L0754: 2, L0747: 2, H0295: 1, S0116: 1, H0306: 1, S0376: 1, H0747: 1, H0749: 1, H0771: 1, H0455: 1, L0623: 1, H0581: 1, H0052: 1, H0569: 1,

| 60 | HDPGI49 | 785887 | 70 | 266 - 484 | 586 | H0123: 1, H0428: 1, H0039: 1, H0622: 1, T0006: 1, H0628: 1, H0673: 1, L0369: 1, L0770: 1, L0769: 1, L0638: 1, L0761: 1, L0667: 1, L0772: 1, L0643: 1, L0771: 1, L0794: 1, L0803: 1, L0804: 1, L0774: 1, L0806: 1, L0805: 1, L0655: 1, L0657: 1, L0658: 1, L0783: 1, L0519: 1, L0789: 1, L0352: 1, S0378: 1, H0521: 1, H0478: 1, L0744: 1, L0439: 1, L0777: 1, L0753: 1 and S0434: 1. | L0766: 6, L0776: 6, H0013: 5, L0777: 5, L0803: 4, S0442: 3, S0002: 3, L0731: 3, L0759: 3, S0116: 2, S0358: 2, S0222: 2, H0575: 2, L0157: 2, H0038: 2, H0616: 2, L0805: 2, L0666: 2, H0521: 2, L0740: 2, L0361: 2, H0170: 1, |

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H0171: 1, S0114: 1, S0212: 1, S0376: 1, S0444: 1, S0360: 1, L3646: 1, H0749: 1, H0771: 1, L0717: 1, H0587: 1, S0414: 1, H0486: 1, H0250: 1, H0427: 1, H0098: 1, H0036: 1, S0474: 1, H0596: 1, H0544: 1, H0546: 1, H0046: 1, S0003: 1, H0615: 1, T0006: 1, H0644: 1, H0111: 1, H0040: 1, H0477: 1, T0041: 1, H0561: 1, H0342: 1, H0646: 1, S0142: 1, H0538: 1, L0763: 1, L0638: 1, L0804: 1, L0774: 1, L0809: 1, L0519: 1, L0788: 1, L4501: 1, L0665: 1, S0053: 1, S0374: 1, H0690: 1, H0648: 1, H0651: 1, S0328: 1, H0539: 1, S0404: 1, H0436: 1, S0206: 1, L0750: 1, L0779: 1, H0445: 1, H0343: 1, S0434: 1, L0599: 1,

61	HDPGT01	771583	71	8 - 271	587	Cys-65 to Ser-71.	L0595: 1 and H0506: 1. H0521: 3, S0278: 2, S0222: 2, H0284: 2, H0265: 1, H0728: 1, S0007: 1, H0208: 1, H0586: 1, H0497: 1, H0642: 1, H0581: 1, H0052: 1, H0572: 1, H0024: 1, H0292: 1, H0428: 1, H0628: 1, H0135: 1, H0163: 1, H0433: 1, S0002: 1, L2263: 1, L0438: 1, L3829: 1, H0539: 1, S0027: 1, S0032: 1, L0439: 1, S0436: 1, S0458: 1 and H0352: 1.	16
62	HDPHI51	460679	72	245 - 367	588	Gly-2 to Glu-7, Arg-27 to Gly-34.	H0521: 1	
63	HDPJM30	879325	73	59 - 1633	589	Arg-15 to Val-22.	L0800: 4, H0617: 3, H0521: 3, L0070: 3, L0742: 3, L0770: 2, L0771: 2, L0794: 2, H0689: 2, L0741: 2, L0439: 2, H0445: 2, H0224: 1, H0637: 1, H0370: 1, H0250: 1, H0052: 1, H0194: 1, L0455: 1, S0422: 1, L0761: 1, L0764: 1,	

64	HDPJM30	603517	374	259 - 438	890	Pro-41 to Ala-55.	L0806: 1, L0659: 1, L5622: 1, L0789: 1, L0790: 1, L0792: 1, H0672: 1, S0152: 1, S0434: 1 and S0436: 1.
	HDPMM88	972734	74	100 - 2913	590	Met-1 to Ser-13, Ser-45 to Phe-51, Asn-103 to Lys-113, Phe-135 to Gly-140, Asp-165 to Pro-178, Ser-224 to Ala-229, Asn-283 to Arg-288, Asp-347 to Tyr-352, Thr-367 to Glu-372, Gly-420 to Thr-425, Glu-456 to Lys-462, Phe-466 to Asn-474, Glu-480 to Leu-485, Asp-673 to Asp-681, Gln-684 to Gly-689, Leu-841 to Gly-874, Gly-890 to Pro-900, Ser-902 to Ser-911, Leu-918 to Asp-924, Ser-930 to Val-935.	L0754: 2, L0777: 2, H0717: 1, H0740: 1, S0212: 1, S0360: 1, S0408: 1, H0747: 1, H0004: 1, H0581: 1, L0142: 1, H0674: 1, H0646: 1, S0422: 1, L0809: 1, L0787: 1, H0521: 1 and H0522: 1.
	HDPMM88	906121	375	141 - 467	891	Ser-28 to Phe-34, Asn-86 to Tyr-93.	
	HDPMM88	902299	376	44 - 181	892		
	HDPMM88	885059	377	419 - 439	893		

	HDPMM88	874074	378	111 - 146	894		
	HDPMM88	854246	379	167 - 334	895		
	HDPMM88	854245	380	28 - 186	896	Ser-26 to Thr-31.	
65	HDPNC61	637585	75	20 - 304	591	Glu-35 to Lys-44, Cys-83 to Gly-88.	L0766: 3, L0764: 2, L0771: 2, L0439: 2, L0731: 2, H0739: 1, H0747: 1, H0749: 1, H0415: 1, H0057: 1, T0006: 1, L0598: 1, L0800: 1, L0768: 1, L0794: 1, L0803: 1, L0774: 1, L0807: 1, L0783: 1, L0519: 1, L0664: 1, L4560: 1, L0352: 1, H0522: 1, L0748: 1, L0747: 1, L0749: 1 and L0756: 1.
66	HDPOJ08	731863	76	159 - 527	592	Lys-30 to Thr-35.	S0474: 29, L0766: 11, H0521: 10, L0803: 7, L0748: 6, L0717: 5, L0759: 5, S0003: 4, L3832: 4, H0663: 3, H0156: 3, L0598: 3, L0770: 3, L0771: 3, L0804: 3, L2439: 3, H0522: 3, L0731: 3, S0436: 3, H0486: 2, S0426: 2, L0805: 2, L0659: 2, L2260: 2, S0126: 2, S0406: 2,

L0749: 2, L0755: 2,
L0757: 2, L0758: 2,
L0590: 2, S0026: 2,
H0716: 1, H0341: 1,
S0212: 1, L0481: 1,
S0444: 1, S0360: 1,
L3649: 1, H0637: 1,
H0580: 1, H0734: 1,
H0749: 1, L3092: 1,
H0619: 1, L3388: 1,
H0586: 1, H0574: 1,
H0427: 1, L0021: 1,
H0575: 1, H0318: 1,
H0545: 1, H0024: 1,
H0373: 1, H0071: 1,
H0179: 1, S0214: 1,
H0428: 1, H0674: 1,
H0591: 1, H0616: 1,
H0488: 1, H0494: 1,
S0438: 1, S0440: 1,
H0647: 1, S0142: 1,
UNKWN: 1, L0369: 1,
L0763: 1, L0769: 1,
L0646: 1, L0648: 1,
L0662: 1, L0650: 1,
L0775: 1, L0653: 1,
L0776: 1, L0656: 1,
L0782: 1, L0809: 1,
L0519: 1, S0052: 1,
L2657: 1, H0144: 1,

67	HDPOZ56	1352319	77	91 - 1791	593	Gln-22 to Gln-44, Ala-90 to Gly-95, Lys-137 to Trp-146, Arg-171 to Asp-181, Glu-370 to Ser-380, Asp-447 to Gly-452, Gln-463 to Trp-469, Asn-505 to Ala-511, Asp-513 to His-520, Ala-542 to Val-551, Asn-559 to His-567.	H0521: 17, H0522: 5, L0665: 4, H0638: 3, H0658: 3, H0255: 2, H0250: 2, H0618: 2, L0804: 2, L0779: 2, H0542: 2, H0663: 1, S0046: 1, H0617: 1, H0560: 1, H0641: 1, S0422: 1, S0426: 1, H0695: 1, L0655: 1, H0689: 1, H0435: 1, H0555: 1, H0543: 1, H0423: 1 and H0506: 1.
	HDPOZ56	815653	381	103 - 1800	897	Gln-22 to Gln-44, Ala-90 to Gly-95, Lys-137 to Trp-146, Arg-171 to Asp-181, Glu-370 to Ser-380, Asp-447 to Gly-452, Gln-463 to Trp-469, Asn-504 to Ala-510,	L3823: 1, H0520: 1, H0547: 1, H0660: 1, S0380: 1, L0742: 1, L0439: 1, L0750: 1, L0777: 1, S0031: 1, H0445: 1, S0434: 1, H0665: 1, H0667: 1, S0194: 1, S0276: 1 and S0458: 1.

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#	ID							
68	HDPOZ56	743479	382	59 - 1018	898	Asp-512 to His-519, Ala-541 to Val-550, Asn-558 to His-566.		
	HDPPN86	1037893	78	127 - 267	594	Gln-22 to Gln-44, Ala-53 to Gly-58.		H0542: 4, S0418: 3, H0543: 3, S0038: 2, H0341: 1, L0018: 1, H0069: 1, H0090: 1, H0056: 1, H0494: 1, H0522: 1 and H0423: 1.
69	HDPPN86	895711	383	117 - 257	899			
	HDPSB18	1043263	79	123 - 323	595	Lys-23 to Lys-31, Ala-38 to Ser-43.	10	L0769: 5, L0774: 3, H0656: 2, S0442: 2, S0358: 2, S0360: 2, S0278: 2, H0620: 2, L0500: 2, L0775: 2, L0710: 2, L0777: 2, L0752: 2, L0588: 2, H0149: 1, H0295: 1, T0049: 1, H0381: 1, H0484: 1, H0483: 1, H0638: 1, S0420: 1, S0444: 1, S0408: 1, S0045: 1, H0587: 1, H0318: 1, H0204: 1, H0530: 1, H0545: 1, H0178: 1, L0471: 1, L0142: 1, H0181: 1, H0087: 1, H0412: 1,

	HDPSB18	903816	384	116 - 307	900		H0623: 1, H0100: 1, S0438: 1, H0633: 1, H0646: 1, H0529: 1, L0506: 1, L0761: 1, L0764: 1, L0648: 1, L0766: 1, L0497: 1, L0493: 1, L0511: 1, L0665: 1, L2260: 1, H0698: 1, H0690: 1, H0521: 1, S0406: 1, S3014: 1, L0747: 1, L0780: 1, H0543: 1 and H0422: 1.
	HDPSB18	905414	385	1525 - 1566	901		
	HDPSB18	732097	386	345 - 665	902	Lys-57 to Gly-64.	
70	HDPSH53	1309174	80	158 - 430	596	Met-1 to Trp-6, Leu-22 to Thr-27, Pro-44 to Thr-63.	L0804: 2, H0521: 2, L0021: 1, H0617: 1, H0623: 1, L0648: 1 and L0665: 1.
	HDPSH53	1040056	387	153 - 536	903	Met-1 to Trp-6, Leu-22 to Thr-27, Pro-44 to Gly-58, Ala-61 to Glu-74, Pro-99 to Gly-111, Cys-121 to Ser-127.	
	HDPSH53	882768	388	212 - 484	904	Met-1 to Trp-6, Leu-22 to Thr-27.	
71	HDPSP01	1352280	81	184 - 2313	597	Gln-75 to Cys-80, Glu-97 to Lys-104,	L0769: 6, L0751: 5, L0752: 5, H0617: 4,

	HDPSP01	689129	389	227 - 1153	905	Gln-75 to Cys-80.	Glu-114 to Ala-119, Thr-177 to Gln-190, Asn-230 to Trp-240, Glu-269 to Arg-274, Pro-279 to Ala-286, Pro-323 to Cys-328, Asn-362 to Leu-367, Thr-390 to Arg-397, Leu-490 to Arg-495, Gln-556 to Leu-561, Gln-657 to Val-674.	L0806: 4, L0731: 4, L0771: 3, L0774: 3, H0370: 2, S0314: 2, H0551: 2, H0059: 2, L0792: 2, L0745: 2, L0750: 2, L0777: 2, S0444: 1, H0728: 1, S0132: 1, H0550: 1, H0392: 1, H0586: 1, H0427: 1, H0618: 1, H0052: 1, H0545: 1, H0123: 1, H0620: 1, S0051: 1, H0135: 1, H0100: 1, H0494: 1, L0800: 1, L0764: 1, L0804: 1, L0775: 1, L0805: 1, L0783: 1, L0809: 1, L0666: 1, L0665: 1, H0684: 1, S0328: 1, H0521: 1, H0555: 1, H0478: 1, L0743: 1, L0747: 1, L0779: 1, L0780: 1, L0755: 1 and S0434: 1.
72	HDPSP54	744440	82	2356 - 2499	598	Pro-29 to Lys-37.	L0740: 8, L0662: 3, L0659: 3, L0663: 3, S0422: 2, L0646: 2, L0766: 2, L0439: 2, L0779: 2, H0171: 1,

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	HDPSP54	502472	390	179 - 343	906		S6024: 1, S0110: 1, S0360: 1, H0411: 1, H0455: 1, S0474: 1, H0510: 1, S0438: 1, L0637: 1, L5565: 1, L0771: 1, L0773: 1, L0794: 1, L0804: 1, L0787: 1, L0665: 1, L0438: 1, H0521: 1, S0406: 1, L0754: 1, L0755: 1 and L0758: 1.
73	HDPTD15	692917	83	223 - 825	599	Arg-20 to Lys-44, Arg-59 to Arg-68, Trp-74 to Lys-86, Thr-91 to Val-102.	H0521: 1
74	HDPUW68	812737	84	40 - 1440	600	Gly-12 to Tyr-26, Val-52 to Asp-59, Gln-88 to Asp-93, Arg-124 to Asn-129, His-193 to Arg-198, Gln-207 to Thr-213, Gln-338 to Arg-346, Ser-378 to Ala-384, Ser-413 to Arg-420, Ser-428 to Glu-434, His-443 to Ser-451, Glu-454 to Ser-461.	H0677: 47, H0521: 14, H0295: 3, H0587: 3, H0556: 2, H0656: 2, H0638: 2, H0411: 2, S0002: 2, L0766: 2, L0776: 2, L0659: 2, L0809: 2, H0670: 2, H0522: 2, S0404: 2, L0743: 2, L0744: 2, L0740: 2, L0731: 2, S0134: 1, H0657: 1, H0254: 1, S0476: 1, S0278: 1, H0486: 1, H0575: 1, H0606: 1,

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75	HDPWN93	992925	85	45 - 2453	601		
					Pro-36 to Ser-52, Ala-63 to Pro-78, Ala-106 to Lys-115, Glu-134 to Glu-141, Val-155 to Asp-164, Phe-199 to Gly-204, Arg-218 to Leu-228, Glu-230 to Val-235, Val-247 to Pro-253, Arg-262 to Gly-276, Thr-303 to Gln-310, Arg-335 to Trp-342, Glu-399 to Ala-415, Ser-458 to Glu-466, Arg-508 to Asp-517, Glu-580 to Pro-585, Gln-620 to Trp-628, Lys-651 to Ala-657, Gly-677 to Met-682, Ala-712 to Leu-717, Gly-724 to Thr-731,	H0618: 17, H0253: 16, 17 L0758: 7, L0659: 6, H0052: 5, L0439: 4, S0354: 3, S0358: 3, H0046: 3, S0150: 3, L0794: 3, L0809: 3, L0666: 3, L0665: 3, S6024: 2, S0356: 2, S0442: 2, T0060: 2, H0424: 2, H0038: 2, H0063: 2, H0412: 2, L0771: 2, S0152: 2, L0754: 2, L0747: 2, L0601: 2, H0543: 2, H0255: 1, H0589: 1, H0580: 1, S0045: 1, S0222: 1, H0409: 1, H0333: 1, L0021: 1, T0082: 1, H0706: 1, H0590: 1, S0010: 1, H0194: 1, H0251: 1,	H0135: 1, H0561: 1, S0438: 1, L0761: 1, L0768: 1, L0655: 1, L2261: 1, S0374: 1, H0690: 1, H0435: 1, H0658: 1, H0696: 1, H0678: 1, L0779: 1, L0752: 1, H0445: 1, S0434: 1 and S0436: 1.

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	HDPWN93	887914	391	35 - 679	907	Arg-770 to Gln-775.	H0309: 1, H0263: 1, H0597: 1, H0545: 1, T0010: 1, S0340: 1, H0622: 1, H0417: 1, H0030: 1, H0135: 1, H0616: 1, H0087: 1, H0494: 1, H0131: 1, H0207: 1, H0646: 1, L0763: 1, L0638: 1, L3905: 1, L0761: 1, L0800: 1, L0764: 1, L0768: 1, L0766: 1, L0803: 1, L0650: 1, L0540: 1, L0384: 1, L5622: 1, L0792: 1, L0663: 1, H0435: 1, H0648: 1, H0672: 1, H0521: 1, S0044: 1, H0555: 1, L0743: 1, L0740: 1, L0759: 1, S0436: 1, H0423: 1 and H0506: 1.
	HDPWN93	905983	392	27 - 158	908	Pro-36 to Ser-52, Ala-63 to Pro-78, Ala-106 to Lys-115, Glu-134 to Glu-141, Val-155 to Asp-164.	
76	HDPXY01	879048	86	23 - 319	602	Pro-39 to Trp-44.	L0646: 4, L0666: 4, L0662: 3, L0749: 3, 17

	HDPXY01	904768	393	33 - 329	909	H0661: 2, H0620: 2, H0617: 2, H0144: 2, L0777: 2, L0731: 2, H0170: 1, S0360: 1, S0046: 1, L0717: 1, H0013: 1, H0052: 1, H0039: 1, H0622: 1, H0606: 1, H0673: 1, L0769: 1, L0796: 1, L5565: 1, L5566: 1, L0764: 1, L0648: 1, L0381: 1, L0805: 1, L0659: 1, L0789: 1, L0792: 1, L0663: 1, L0665: 1, H0689: 1, H0660: 1, H0648: 1, H0539: 1, H0521: 1, L0779: 1 and L0603: 1.
	HDPXY01	895716	394	539 - 607	910	Pro-39 to Trp-44.
	HDPXY01	895715	395	1190 - 1267	911	
77	HDTBD53	972757	87	288 - 1385	603	Glu-91 to Arg-117, Lys-124 to Ser-136, Tyr-191 to Glu-200, Glu-265 to Lys-272. — L0439: 17, L0731: 17, L0747: 16, L0766: 13, S0360: 8, L0770: 8, L0659: 8, L0754: 8, H0553: 7, L0663: 7, L0749: 7, L0758: 7, H0486: 6, S0192: 6, L0662: 5, L0105: 4, H0644: 4, L0438: 4,

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H0547: 4, L0748: 4, L0751: 4, L0752: 4, L0755: 4, L0599: 4, H0542: 4, H0556: 3, H0662: 3, S0420: 3, H0599: 3, H0050: 3, H0266: 3, H0622: 3, H0135: 3, H0551: 3, H0529: 3, L0783: 3, H0519: 3, H0670: 3, H0521: 3, H0555: 3, L0750: 3, H0717: 2, H0663: 2, H0638: 2, S0476: 2, H0592: 2, H0013: 2, H0598: 2, H0090: 2, H0038: 2, H0040: 2, H0494: 2, S0440: 2, S0344: 2, L0638: 2, L0761: 2, L0764: 2, L0649: 2, L0774: 2, L0775: 2, L0657: 2, L0787: 2, L0666: 2, H0144: 2, L0565: 2, H0659: 2, S0044: 2, L0759: 2, S0194: 2, H0422: 2, H0170: 1, S0040: 1, H0713: 1, T0049: 1, S0134: 1, S0110: 1, H0402: 1, S0356: 1,

S0442: 1, S0354: 1,
S0376: 1, S0444: 1,
S0410: 1, S0300: 1,
H0369: 1, H0261: 1,
H0549: 1, H0550: 1,
S0222: 1, H0586: 1,
H0587: 1, L0586: 1,
T0060: 1, H0244: 1,
S0280: 1, L0021: 1,
H0025: 1, H0421: 1,
H0309: 1, L0040: 1,
H0544: 1, L0471: 1,
H0024: 1, L0163: 1,
S0388: 1, H0188: 1,
H0687: 1, S0003: 1,
H0615: 1, H0039: 1,
H0030: 1, H0674: 1,
H0212: 1, H0068: 1,
S0366: 1, H0163: 1,
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H0413: 1, H0623: 1,
H0561: 1, H0641: 1,
H0647: 1, H0652: 1,
S0144: 1, S0142: 1,
S0002: 1, L0369: 1,
L0769: 1, L5575: 1,
L5565: 1, L3905: 1,
L5566: 1, L0772: 1,
L0800: 1, L0771: 1,

	HDTBD53	906342	396	292 - 1389	912	Glu-91 to Arg-117, Lys-124 to Ser-136.	L0521: 1, L0768: 1, L0794: 1, L0381: 1, L0806: 1, L0654: 1, L0655: 1, L0636: 1, L0384: 1, L0809: 1, L0528: 1, L0788: 1, L0789: 1, S0126: 1, H0689: 1, H0682: 1, H0658: 1, H0648: 1, S0328: 1, H0539: 1, H0696: 1, S0406: 1, L0740: 1, L0757: 1, L0603: 1, H0665: 1, S0196: 1, H0423: 1 and S0460: 1.
78	HDTBV77	785879	88	326 - 2149	604	Lys-5 to Lys-10, Asn-33 to Lys-39, Asp-48 to Lys-54, Pro-62 to Asp-67, Asn-116 to Arg-123, His-157 to Ala-162, Val-242 to Lys-249, Val-251 to Asp-264.	H0553: 3, H0717: 2, H0486: 1, H0427: 1, H0081: 1, H0014: 1, S0388: 1, H0112: 1, H0030: 1, H0031: 1, H0644: 1, H0488: 1, H0519: 1, L0759: 1, H0543: 1 and H0506: 1.
79	HDTDQ23	1306984	89	132 - 302	605	Arg-24 to Arg-31, Ile-33 to Trp-41, Met-43 to His-52.	L0659: 5, L0666: 4, L0665: 4, L2634: 3, L0471: 2, H0031: 2, L0646: 2, L0794: 2, L0766: 2, L0657: 2,

	HDTDQ23	879009	397	148 - 471	913	Arg-24 to Arg-31, Ile-33 to Gly-41.	H0265: 1, H0685: 1, L0785: 1, S0356: 1, S0376: 1, S0360: 1, H0742: 1, S0007: 1, H0747: 1, H0486: 1, L2540: 1, H0069: 1, H0025: 1, H0457: 1, H0252: 1, H0428: 1, L0055: 1, H0038: 1, S0344: 1, L0625: 1, L0761: 1, L0800: 1, L0553: 1, L0649: 1, L0803: 1, L0650: 1, L0606: 1, L3872: 1, L0791: 1, L0663: 1, L0664: 1, H0684: 1, H0435: 1, H0648: 1, S0380: 1, L3832: 1, L0749: 1, L0786: 1, L0780: 1, L0755: 1, L0759: 1, L0596: 1, L0601: 1, H0543: 1 and H0422: 1.
	HDTDQ23	751707	398	148 - 369	914	Arg-24 to Arg-31.	
80	HE2DE47	619852	90	808 - 2427	606	Leu-9 to Tyr-15, Asp-34 to Gln-46, Pro-51 to Asp-57, Gly-88 to Thr-104,	L0439: 10, L0747: 9, L0766: 8, L0770: 5, L0666: 4, L0754: 4, L0777: 4, L0659: 3,

| Thr-123 to Ser-128. | L0783: 3, S0126: 3, H0543: 3, L0483: 2, H0264: 2, L0764: 2, L0662: 2, L0768: 2, L0665: 2, L0438: 2, L0748: 2, L0756: 2, L0752: 2, L0755: 2, L0758: 2, L0759: 2, H0170: 1, T0049: 1, H0341: 1, S0029: 1, H0661: 1, H0306: 1, S0408: 1, H0580: 1, S0045: 1, H0431: 1, H0455: 1, H0586: 1, L0622: 1, H0575: 1, H0004: 1, H0581: 1, H0421: 1, H0263: 1, H0569: 1, H0015: 1, S0051: 1, S0003: 1, H0615: 1, L0142: 1, H0090: 1, H0625: 1, S0422: 1, L0598: 1, H0529: 1, L0769: 1, L0667: 1, L0646: 1, L0774: 1, L0375: 1, L0657: 1, L0519: 1, L0664: 1, H0144: 1, S0374: 1, H0547: 1, H0435: 1, H0666: 1, S0380: 1, H0521: 1, |

	HE2DE47	382025	399	515 - 757	915		S0404: 1, H0555: 1, L0749: 1, L0750: 1, L0779: 1, L0592: 1, L0608: 1, S0026: 1 and H0542: 1.
81	HE2EB74	513662	91	507 - 566	607	Leu-31 to Asn-38.	H0170: 1, L0717: 1, H0586: 1, H0486: 1, H0596: 1, L0770: 1, L0637: 1, L0521: 1, L0766: 1, L0666: 1, H0658: 1, L0779: 1, L0731: 1, L0759: 1 and H0543: 1.
82	HE2NV57	740750	92	99 - 398	608	Ala-84 to Gln-93.	S0414: 3, L0805: 3, S0412: 3, H0457: 2, L0756: 2, H0170: 1, H0645: 1, H0455: 1, H0421: 1, H0100: 1, L0803: 1, S0052: 1, S0374: 1, H0696: 1 and L0743: 1.
83	HE2PH36	570903	93	28 - 228	609		H0171: 1, S0114: 1 and S0356: 1.
84	HE8DS15	847060	94	91 - 309	610		L0779: 8, L0770: 7, L0731: 7, L0662: 6, L0803: 5, L0599: 5, L0758: 4, H0739: 3, H0624: 3, H0486: 3, H0615: 3, L0748: 3,

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H0038: 2, S0422: 2,
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L0775: 2, L0647: 2,
L0438: 2, L0742: 2,
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L0485: 2, H0171: 1,
H0717: 1, S0442: 1,
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H0581: 1, S0049: 1,
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H0188: 1, H0644: 1,
H0628: 1, H0383: 1,
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L0768: 1, L0794: 1,
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L0659: 1, L0532: 1,
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H0691: 1, S0126: 1,
H0660: 1, H0648: 1,

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85	HE9CP41	560625	95	132 - 257	611	Ala-22 to Lys-36.	H0421: 1 and H0144: 1.
86	HE9DG49	1299935	96	70 - 675	612	Ala-118 to Phe-124, Arg-178 to Lys-201.	L0740: 10, L0755: 7, H0556: 4, H0251: 4, S0358: 3, L0766: 3, S0420: 2, S0444: 2, S0408: 2, L0483: 2, H0413: 2, S0440: 2, L0772: 2, L0764: 2, L0768: 2, L0775: 2, L0743: 2, L0747: 2, H0218: 1, S0040: 1, S0212: 1, S0442: 1, S0360: 1, S0046: 1, S0476: 1, H0549: 1, H0036: 1, H0046: 1, H0687: 1, H0646: 1, L0369: 1, L0770: 1, L0363: 1, L0649: 1, L5568: 1, L0774: 1, L0806: 1, L0783: 1, L0791: 1, L0792: 1, L4501: 1, L0666: 1, L0663: 1, L0665: 1,

	HE9DG49	658678	400	70 - 672	916	Ala-118 to Phe-124, Arg-178 to Lys-201.	H0144: 1, H0726: 1, H0658: 1, S0380: 1, H0752: 1, H0134: 1, S0028: 1, L0754: 1, L0731: 1, L0757: 1, H0445: 1, H0343: 1, S0011: 1, H0668: 1 and S0276: 1.
	HE9DG49	382000	401	78 - 686	917	Ala-118 to Phe-124, Thr-177 to Lys-203.	
87	HE9HY07	420063	97	35 - 160	613	Pro-35 to Phe-41.	H0615: 1 and H0144: 1.
88	HEBEJ18	701802	98	51 - 467	614	Ser-39 to Asn-45, Asn-103 to Ser-109.	H0556: 493, H0265: 241, H0046: 105, L0601: 101, H0584: 98, H0521: 85, H0543: 75, S0027: 57, H0542: 57, L0591: 52, S0418: 47, S0420: 47, S3014: 47, H0559: 46, L0593: 44, L0596: 43, S0126: 41, H0266: 40, S0046: 37, S0152: 37, H0052: 36, H0617: 35, H0056: 34, H0134: 34, S0040: 32, S0212: 32, L0595: 32, H0069: 31, H0561: 31, H0286: 30, H0585: 29,

S0132: 28, H0083: 28, L0666: 27, S0278: 25, H0657: 24, H0341: 23, H0623: 23, H0494: 23, H0575: 22, L0592: 22, S0045: 21, H0666: 21, L0588: 21, S0344: 20, L0663: 20, L0751: 20, H0090: 19, L0775: 19, S0194: 19, H0125: 18, H0618: 18, H0135: 18, H0318: 17, S0022: 17, H0424: 17, T0042: 17, L0659: 17, L0748: 17, S0011: 17, S0192: 17, H0013: 16, H0040: 16, S0360: 15, T0040: 15, H0292: 15, H0063: 15, H0136: 15, H0167: 14, H0599: 14, H0124: 14, H0087: 14, L0664: 14, H0144: 14, H0519: 14, H0658: 14, H0518: 14, S0037: 14, H0250: 13, H0253: 13, H0457: 13, S0144: 13, L0653: 13, L0747: 13, L0750: 13, T0002: 12, H0141: 12, H0140: 12, H0580: 12, S0222:12, H0581:12,

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T0041: 1, H0512: 1,
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L0790: 1, S0052: 1,
S0428: 1, H0684: 1,
H0187: 1, H0436: 1,

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89	HEEAQ11	777843	99	213 - 656	615	Phe-31 to Asp-38, Asn-59 to Tyr-65, Ser-76 to Glu-82, Thr-96 to Cys-108, Gln-111 to Asn-118.	L0758: 4, L0794: 3, H0549: 2, H0038: 2, L0768: 2, L0779: 2 and L0767: 1.
90	HEGAH43	532596	100	29 - 364	616	Lys-35 to Glu-41, Ala-62 to Asn-67.	L0758: 5, H0550: 1, S0374: 1 and L0779: 1.
91	HELHD85	847372	101	41 - 280	617	Asn-36 to Gln-41, Pro-49 to Ser-54, Cys-65 to Ser-70.	L0743: 3, S0408: 2, S0022: 2, L0772: 2, L0805: 2, L0749: 2, S0242: 2, H0716: 1, S0116: 1, H0662: 1, S0360: 1, S0045: 1, H0392: 1, H0455: 1, L0021: 1, H0599: 1, T0082: 1, H0309: 1, H0046: 1, H0086: 1, H0024: 1, H0628: 1, H0617: 1, H0606: 1, H0487: 1, H0509: 1, L0763: 1, L0646: 1, L0641: 1, L0649: 1, L0803: 1, L0652: 1, L0629: 1, L0659: 1,

#	Name			Range	SEQ	Description	
							L0787: 1, L0665: 1, S0053: 1, S0027: 1, S0032: 1, L0744: 1, L0751: 1, L0747: 1 and L0779: 1.
92	HEOMQ63	603533	102	123 - 266	618		L0766: 3, L0777: 2, S0116: 1, S0376: 1, H0457: 1, S0440: 1, L0771: 1, L0803: 1, L0804: 1, L0657: 1, L0659: 1, H0525: 1, S0406: 1 and L0750: 1.
93	HEPAA46	596830	103	18 - 389	619	Tyr-21 to Asp-40, Ser-58 to Arg-64, Thr-71 to Ser-76, Ser-106 to Thr-112.	H0549: 3, H0150: 2, L0779: 2 and L0758: 1.
94	HEPAB80	1307790	104	73 - 438	620	Met-1 to Pro-6, Glu-58 to Cys-63, Glu-65 to Gly-72, Thr-74 to Asn-88, Tyr-104 to Trp-109.	H0150: 1
	HEPAB80	570048	402	67 - 435	918	Met-1 to Pro-6, Glu-58 to Cys-63, Glu-65 to Gly-72, Thr-74 to Val-87.	
95	HFABG18	847073	105	53 - 316	621	Glu-36 to Lys-55.	L0743: 7, L0747: 6, L0758: 6, L0766: 5, L0666: 5, L0754: 5, L0750: 5, L0662: 4, L0665: 4, L0783: 4,

L0751: 4, L0777: 4,
H0170: 3, S0132: 3,
L0503: 3, L0500: 3,
L0769: 3, L0774: 3,
L0805: 3, L0809: 3,
L0565: 3, L0749: 3,
L0757: 3, L0596: 3,
S0360: 2, H0013: 2,
H0024: 2, H0617: 2,
H0673: 2, L0641: 2,
L0773: 2, L0768: 2,
L0649: 2, L0499: 2,
L0375: 2, L0659: 2,
L0664: 2, H0658: 2,
L0744: 2, L0748: 2,
L0740: 2, L0745: 2,
L0603: 2, H0265: 1,
H0556: 1, S6024: 1,
H0661: 1, H0662: 1,
S0418: 1, T0008: 1,
H0351: 1, S0222: 1,
H0370: 1, T0039: 1,
L0015: 1, S0280: 1,
H0575: 1, H0004: 1,
H0618: 1, H0596: 1,
H0231: 1, H0545: 1,
H0009: 1, H0012: 1,
S0388: 1, S0051: 1,
H0292: 1, H0688: 1,
H0644: 1, L0055: 1,

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#	ID			Range		Description		
96	HFABH95		106	199 - 549	622			H0674: 1, H0124: 1, H0598: 1, H0087: 1, S0440: 1, S0150: 1, S0142: 1, L0763: 1, L0770: 1, L0764: 1, L0771: 1, L0794: 1, L0650: 1, L0651: 1, L0378: 1, L0776: 1, L0655: 1, L0629: 1, L0657: 1, L0493: 1, L0634: 1, L0528: 1, H0144: 1, H0547: 1, H0690: 1, H0682: 1, H0670: 1, S0328: 1, H0518: 1, H0436: 1, L0746: 1, L0756: 1, L0779: 1, L0780: 1, L0731: 1, H0445: 1, S0434: 1, L0592: 1, L0595: 1, H0668: 1, S0194: 1, H0506: 1 and H0008: 1.
97	HFAEF57		107	232 - 492	623	Leu-69 to Leu-74.	S6024: 1, S0430: 1, H0039: 1, H0056: 1 and H0660: 1.	
98	HFAMH77		108	240 - 425	624	Ser-33 to Ser-44.	S6024: 1	L0771: 5, L0805: 4, S0007: 3, L0794: 3, L0439: 3, L0758: 3, H0657: 2, L0662: 2,

| 99 | HFCCQ50 | 579993 | 109 | 47 - 1105 | 625 | Ala-27 to Ser-38, Pro-43 to Asn-54, Thr-115 to Asp-121, Leu-225 to Val-232, Pro-247 to Gly-252, Arg-306 to Leu-311. | L0766: 2, L0659: 2, H0670: 2, L0731: 2, L0757: 2, S0436: 2, H0624: 1, S0134: 1, S0356: 1, S0408: 1, H0733: 1, H0747: 1, H0486: 1, L3653: 1, S0474: 1, H0581: 1, H0327: 1, H0545: 1, H0373: 1, H0622: 1, L0770: 1, L0769: 1, L0761: 1, L0644: 1, L0803: 1, L0774: 1, L0655: 1, L0438: 1, H0539: 1, H0521: 1, H0555: 1, L0741: 1, L0748: 1, L0779: 1 and S0031: 1. | S0476: 1, L0803: 1, L0666: 1 and L0608: 1. |
| 100 | HFCEB37 | 411345 | 110 | 487 - 519 | 626 | | | S0222: 2, L0438: 2, S0134: 1, S0045: 1, H0747: 1, H0013: 1, H0009: 1, S6028: 1, L0598: 1, L0532: 1, S0052: 1, H0696: 1, |

101	HFFAD59	520369	111	44 - 181	627		S0146: 1, L0439: 1, L0777: 1 and L0366: 1.
102	HFFAL36	560639	112	68 - 238	628	Lys-13 to Asn-19, Asn-27 to Asn-35.	H0172: 2 H0172: 1, L0500: 1, L0512: 1, L0748: 1, L0749: 1, L0777: 1 and L0096: 1.
103	HFGAD82	513669	113	1019 - 1135	629		L0439: 22, L0756: 12, S0222: 11, L0438: 10, S0414: 8, S0051: 8, L0598: 7, S0412: 6, L3657: 5, L0770: 5, H0144: 5, L0638: 4, H0170: 3, S0282: 3, H0438: 3, S0036: 3, L0740: 3, S0031: 3, S0260: 3, S0007: 2, H0441: 2, L3655: 2, S0049: 2, H0052: 2, H0178: 2, H0051: 2, S6028: 2, S0038: 2, L0759: 2, L0589: 2, L0366: 2, H0583: 1, S0001: 1, H0662: 1, L3658: 1, L0476: 1, S0300: 1, H0406: 1, S6014: 1, H0455: 1, H0013: 1, H0244: 1, H0390: 1, S0346: 1,

104	HFIUR10	532060	114	50 - 184	630	Gln-31 to Pro-39.	H0327: 1, H0041: 1, H0563: 1, H0567: 1, S0050: 1, S0048: 1, S0388: 1, S0039: 1, L0796: 1, L5575: 1, L0630: 1, L0767: 1, L0794: 1, L0774: 1, L0805: 1, L0776: 1, L0518: 1, L0809: 1, L0788: 1, L0792: 1, L0666: 1, S0374: 1, H0658: 1, S0330: 1, L0777: 1, L0758: 1, L0592: 1 and L0593: 1.
105	HFTBM50	545012	115	158 - 262	631	Ala-19 to Lys-34.	H0265: 2, L0591: 2, H0556: 1, S0356: 1, H0271: 1, H0622: 1, S0428: 1, S0434: 1 and S0196: 1. L0439: 6, L0731: 4, L0769: 2, L0666: 2, S0432: 2, S0206: 2, L0751: 2, L0777: 2, L0759: 2, L0591: 2, H0341: 1, H0661: 1, S0408: 1, H0601: 1, H0497: 1, H0123: 1, L0471: 1, H0051: 1, H0252: 1, H0673: 1, H0616: 1, H0551: 1,

							H0646: 1, S0422: 1, L0372: 1, L0771: 1, L0773: 1, L0768: 1, L0775: 1, L0375: 1, L0527: 1, L0664: 1, L0665: 1, S0374: 1, H0519: 1, H0659: 1, H0521: 1, H0522: 1, L0747: 1, L0749: 1, L0755: 1, L0758: 1, S0031: 1, L0683: 1, L0590: 1 and L0595: 1.
106	HFTDZ36	545726	116	547 - 753	632		L0779: 5, L0758: 4, S0036: 2, H0038: 2, S0422: 2, L0662: 2, L0803: 2, H0171: 1, H0208: 1, H0411: 1, S0222: 1, H0013: 1, H0108: 1, H0581: 1, H0123: 1, H0024: 1, H0373: 1, S0051: 1, S6028: 1, H0615: 1, L0794: 1, L0804: 1, S0126: 1, H0436: 1, S0028: 1, L0756: 1, L0777: 1, L0731: 1 and S0242: 1.
107	HFVAB79	1300736	117	133 - 717	633	Ser-21 to Trp-34, Cys-68 to Gly-89, Cys-122 to Phe-133,	L0803: 8, L0748: 4, H0151: 1, S0045: 1, H0574: 1, H0038: 1,

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No.	Clone	Accession	ID	Range	SEQ ID	Amino acid	Modifications
108	HFVAB79	565076	403	139 - 723	919	Glu-188 to Leu-194.	H0745: 1, S0438: 1, L0771: 1, L0804: 1, L0774: 1 and L0750: 1.
	HFVGE32	854545	118	154 - 393	634	Ser-21 to Trp-34, Cys-68 to Gly-89, Cys-122 to Phe-133.	S0052: 2 and H0393: 1.9
	HFVGE32	698580	404	1 - 201	920	His-49 to Ser-55.	
109	HFXBL33	778070	119	152 - 640	635		H0657: 3, H0645: 2, L0748: 2, H0542: 2, H0583: 1, H0650: 1, S0001: 1, L0586: 1, H0013: 1, L0021: 1, T0071: 1, H0354: 1, H0179: 1, T0006: 1, H0591: 1, H0272: 1, L0667: 1, H0547: 1, H0521: 1, S0404: 1, S0031: 1 and L0599: 1.
110	HFXDN63	553685	120	33 - 194	636	Pro-21 to Ser-27.	S0001: 1
111	HFXJX44	701988	121	98 - 241	637		H0590: 2, S0282: 1, H0486: 1, H0421: 1 and H0594: 1.
112	HFXKJ03	505207	122	179 - 304	638	Met-1 to Arg-8.	S0282: 1, H0619: 1 and H0581: 1.
113	HFXKT05	658690	123	204 - 443	639	Leu-16 to Ser-23, Ser-38 to Pro-43, Gly-53 to Leu-60.	L2804: 16, L2400: 15, L0748: 8, L3019: 5, L3316: 3, L2138: 3, H0553: 2, L3140: 2, L3904: 2, S0378: 2,

| 114 | HGBHI35 | 570262 | 124 | 87 - 965 | 640 | Pro-10 to Arg-15, Leu-96 to Ser-103, Gly-172 to Pro-178, Gln-213 to Asp-218, Asn-268 to Leu-275, Arg-282 to Phe-289. | L0777: 2, L0758: 2, H0657: 1, S0282: 1, H0402: 1, L0005: 1, H0333: 1, T0114: 1, S0280: 1, H0618: 1, H0253: 1, H0581: 1, H0052: 1, H0050: 1, H0620: 1, S0388: 1, H0354: 1, H0135: 1, S0344: 1, L0763: 1, L0638: 1, L0761: 1, L0764: 1, L0363: 1, L0766: 1, L0651: 1, L0805: 1, L0655: 1, L0659: 1, L0666: 1, L2261: 1, H0701: 1, L0749: 1, L0756: 1, L0779: 1, L0752: 1, L0599: 1, H0542: 1, H0423: 1, H0422: 1 and H0506: 1. | L0748: 9, L0766: 6, L0665: 6, L0751: 6, H0550: 5, S0358: 4, L0774: 4, L0758: 4, L0581: 4, H0135: 3, L0662: 3, L0775: 3, L0776: 3, L0743: 3, L0747: 3, L0749: 3, L0777: 3, L0600: 3, |

H0295: 2, H0722: 2,
H0052: 2, H0014: 2,
H0510: 2, L0640: 2,
L0659: 2, L0526: 2,
L0809: 2, H0696: 2,
L0753: 2, S0134: 1,
S0212: 1, S0376: 1,
S0408: 1, H0742: 1,
H0730: 1, H0747: 1,
H0549: 1, H0331: 1,
H0486: 1, H0575: 1,
S0049: 1, H0085: 1,
H0204: 1, H0057: 1,
S0051: 1, H0266: 1,
H0188: 1, H0687: 1,
H0169: 1, H0090: 1,
H0591: 1, T0067: 1,
H0488: 1, H0714: 1,
S0438: 1, L0374: 1,
L0648: 1, L0376: 1,
L0807: 1, L5622: 1,
L0790: 1, L0791: 1,
L0666: 1, H0701: 1,
H0547: 1, S0126: 1,
H0660: 1, H0672: 1,
H0539: 1, H0436: 1,
L0439: 1, L0746: 1,
L0750: 1, L0779: 1,
L0752: 1, L0759: 1 and
S0436: 1.

115	HGBIB74	837220	125	14 - 1144	641	Ser-67 to Glu-74, Arg-81 to Val-86, Tyr-147 to Asp-160.	H0253: 7, H0618: 6, H0556: 2, S0356: 2, H0373: 2, H0522: 2, L0758: 2, L0603: 2, S0001: 1, S0278: 1, H0586: 1, H0050: 1, H0014: 1, H0644: 1, S0036: 1, H0038: 1, H0494: 1, H0625: 1, S0294: 1, L0769: 1, H0435: 1 and H0521: 1.
	HGBIB74	838602	405	28 - 540	921	Ser-67 to Glu-74, Arg-81 to Val-86, Tyr-147 to Asp-160.	
	HGBIB74	899864	406	2 - 454	922	Ser-3 to Gln-10, Val-14 to Gln-19, Asp-32 to His-40, Gly-50 to His-55, Pro-76 to Ser-87.	
116	HGLAF75	566838	126	231 - 596	642	Ser-40 to Gly-45, Leu-73 to Arg-80.	H0351: 10, L0439: 4, L0766: 3, L3255: 2, L2562: 2, L0775: 2, L0666: 2, L0779: 2, L0780: 2, L0755: 2, L0731: 2, H0772: 1, L3388: 1, H0333: 1, H0486: 1, H0015: 1, H0687: 1, S0422: 1, L0761: 1, L0776: 1, L0659: 1, L0663: 1,

						H0682: 1, S0152: 1, L0745: 1, L0752: 1 and S0026: 1.
117	HGLAL82	520261	127	144 - 224	643	L0667: 2, S0114: 1, H0351: 1, H0318: 1, H0615: 1 and L0764: 1.
118	HHEMA59	823100	128	239 - 469	644	L0771: 5, L0766: 4, L0748: 4, L0754: 4, H0551: 3, S0003: 2, H0328: 2, H0615: 2, S0422: 2, H0144: 2, L0438: 2, S0013: 2, L0747: 2, L0756: 2, L0759: 2, H0170: 1, S6024: 1, H0656: 1, S0110: 1, H0662: 1, H0176: 1, S0356: 1, S0360: 1, L0717: 1, S6016: 1, S0222: 1, H0438: 1, H0156: 1, H0575: 1, H0036: 1, H0318: 1, H0581: 1, H0020: 1, H0031: 1, S0036: 1, S0294: 1, S0002: 1, L0770: 1, L0638: 1, L0662: 1, L0774: 1, L0652: 1, L0655: 1, L0606: 1, L0659: 1, L0663: 1, S0216: 1, H0648: 1,

							H0651: 1, H0539: 1, S0152: 1, H0522: 1, L0777: 1, L0731: 1, S0031: 1, L0581: 1, S0192: 1, S0194: 1, H0543: 1 and H0423: 1.
119	HHENV10	562772	129	143 - 295	645	Asp-26 to Leu-36, Leu-42 to Phe-50.	H0543: 2, H0497: 1 and H0625: 1.
120	HHEPM33	877639	130	269 - 517	646	Met-1 to Thr-13, Ser-27 to Phe-34, Arg-53 to Pro-59, Ser-77 to Ser-82.	L0777: 9, H0617: 5, S0418: 3, H0618: 3, H0556: 2, H0489: 2, H0253: 2, H0560: 2, L0770: 2, L0803: 2, L0789: 2, S0328: 2, H0436: 2, H0444: 2, H0543: 2, H0265: 1, H0685: 1, S0218: 1, H0657: 1, S0116: 1, H0484: 1, S0420: 1, S0356: 1, S0354: 1, S0358: 1, S0444: 1, S0360: 1, H0637: 1, L0103: 1, S0007: 1, H0441: 1, H0559: 1, H0486: 1, H0599: 1, H0042: 1, H0575: 1, H0052: 1, H0597: 1, H0545: 1, H0373: 1, H0594: 1, H0266: 1, T0023: 1, H0553: 1,

| 121 | HHFBY53 | 821330 | 131 | 172 - 366 | 647 | Arg-22 to Asn-32. | H0063: 1, H0551: 1, H0100: 1, H0646: 1, H0529: 1, L0371: 1, L0662: 1, L0766: 1, L0804: 1, L0774: 1, L0378: 1, L0806: 1, L0805: 1, L0655: 1, L0659: 1, L0809: 1, L0663: 1, H0698: 1, H0547: 1, S3012: 1, S0028: 1, L0731: 1, S0436: 1, S0192: 1, H0542: 1 and H0352: 1. S0360: 3, H0670: 3, H0556: 2, H0292: 2, H0686: 1, H0685: 1, S0134: 1, S0116: 1, H0662: 1, H0640: 1, S0300: 1, H0586: 1, H0642: 1, L0622: 1, L0586: 1, H0253: 1, H0050: 1, H0057: 1, T0006: 1, L0653: 1, L0657: 1, L0659: 1, L0787: 1, L0666: 1, L0663: 1, H0547: 1, H0659: 1, H0648: 1, H0436: 1, L0748: 1, L0362: 1, L0361: 1, H0653: 1, H0542: 1, |

122	HHFGR93	865581	132	132 - 1304	648	Ser-61 to Trp-66, Lys-76 to Asp-82, Leu-116 to Tyr-124, Gln-131 to His-140, Gln-175 to Pro-181, Trp-187 to Ser-193, Arg-273 to Leu-278, Glu-280 to Lys-286, Pro-296 to Ile-304, Arg-320 to Gly-329, Pro-345 to Pro-357.	H0423: 1 and H0422: 1.	L0754: 41, L0747: 8, H0553: 5, L0755: 5, L0659: 4, H0124: 3, H0265: 2, H0556: 2, H0586: 2, H0427: 2, H0575: 2, H0050: 2, L0471: 2, H0616: 2, H0056: 2, L0764: 2, L0662: 2, L0794: 2, L0748: 2, L0751: 2, L0749: 2, L0750: 2, H0305: 1, S0358: 1, S0045: 1, S0046: 1, H0619: 1, H0441: 1, H0485: 1, S0280: 1, H0599: 1, H0042: 1, H0046: 1, H0569: 1, H0024: 1, H0051: 1, H0328: 1, H0030: 1, H0644: 1, H0361: 1, H0040: 1, H0413: 1, S0038: 1, L0770: 1, L0769: 1, L0800: 1, L0644: 1, L0363: 1, L0803: 1, L0804: 1, L0775: 1, L0806: 1, L0783: 1, L0666: 1, L0665: 1, H0144: 1, S0146: 1, H0555: 1,

	HHFGR93	691402	407	130 - 840	923	S3012: 1, L0779: 1, L0731: 1, L0605: 1, L0599: 1, L0603: 1, H0543: 1, H0422: 1 and H0506: 1.	
123	HHGCG53	340818	133	230 - 361	649	H0333: 1	8
124	HHGCM76	662329	134	270 - 536	650	L0803: 6, H0052: 4, H0036: 3, L0665: 3, H0574: 2, H0559: 2, L0763: 2, L0809: 2, L0791: 2, L0666: 2, L0663: 2, L0748: 2, L0745: 2, L0747: 2, H0624: 1, H0265: 1, H0657: 1, H0381: 1, S0045: 1, H0550: 1, H0614: 1, H0587: 1, H0333: 1, T0040: 1, L0022: 1, H0575: 1, H0564: 1, H0068: 1, H0509: 1, L0769: 1, L0637: 1, L0643: 1, L0764: 1, L0662: 1, L0804: 1, L0806: 1, L0527: 1, L0783: 1, L0382: 1, L0664: 1, H0144: 1, H0690: 1, H0682: 1, H0670: 1, H0694: 1, H0626: 1,	17

125						L0743: 1, L0777: 1, L0780: 1, L0755: 1, H0343: 1 and S0011: 1.
	HHGCM76	383547	408	270 - 302	924	
	HHGDF16	579890	135	253 - 411	651	L0803: 6, S0422: 4, L0766: 4, L0777: 4, L0362: 4, L0794: 3, L0805: 3, L0439: 3, L0779: 3, L0731: 3, H0543: 3, S0444: 2, H0486: 2, L0471: 2, L0637: 2, L0666: 2, L0665: 2, H0539: 2, H0521: 2, L0758: 2, L0592: 2, L0581: 2, H0170: 1, L3644: 1, H0685: 1, H0583: 1, H0650: 1, H0656: 1, S0212: 1, S0442: 1, S0376: 1, H0580: 1, H0733: 1, H0339: 1, H0749: 1, S0300: 1, L0717: 1, H0333: 1, H0331: 1, H0013: 1, H0156: 1, L0021: 1, H0581: 1, S0362: 1, S0003: 1, L0483: 1, H0038: 1, H0634: 1, H0616: 1, T0067: 1, H0412:1, H0641: 1,

							S0142: 1, L0598: 1, L3905: 1, L0646: 1, L0662: 1, L5564: 1, L0774: 1, L0651: 1, L0776: 1, L0607: 1, L0527: 1, L0657: 1, L0659: 1, L5622: 1, L0788: 1, L0791: 1, L0793: 1, L0663: 1, H0144: 1, S0310: 1, L0438: 1, L3828: 1, H0435: 1, H0658: 1, H0670: 1, S0328: 1, S0330: 1, L0745: 1, L0747: 1, L0749: 1, L0756: 1, L0759: 1, S0260: 1, H0445: 1, S0436: 1, L0599: 1 and S0194: 1.
126	HHPDX20	610321	136	174 - 374	652	Gly-43 to Gly-48.	S0222: 1 and H0051: 1.
127	HHPEN62	695134	137	183 - 1709	653	Met-98 to Gln-107, Gly-120 to Gly-126, Pro-138 to Trp-145, Leu-159 to Gly-169, Val-211 to Arg-217, Cys-256 to His-262, Glu-320 to Val-327, Phe-399 to Asn-406, Asp-444 to Ser-450, Asp-475 to Trp-488.	L0766: 7, L0731: 7, H0457: 6, H0051: 6, L0754: 6, L0803: 4, L0666: 4, H0140: 3, S0474: 3, H0052: 3, L0157: 3, L0662: 3, L0659: 3, L5622: 3, L0758: 3, H0657: 2, S0140: 2, S0010: 2, H0628: 2, S0036: 2,

H0100: 2, S0112: 2,
L0532: 2, L0438: 2,
H0547: 2, L0743: 2,
S0242: 2, H0542: 2,
H0422: 2, H0265: 1,
H0656: 1, S0282: 1,
S0444: 1, S0360: 1,
S0408: 1, H0735: 1,
H0749: 1, L0463: 1,
H0351: 1, H0261: 1,
H0438: 1, H0586: 1,
H0635: 1, H0599: 1,
H0318: 1, H0581: 1,
H0251: 1, H0327: 1,
H0545: 1, H0046: 1,
L0471: 1, S0051: 1,
H0375: 1, H0622: 1,
T0006: 1, H0553: 1,
H0598: 1, H0163: 1,
H0040: 1, H0551: 1,
L0564: 1, H0334: 1,
H0561: 1, S0440: 1,
H0529: 1, L0800: 1,
L0794: 1, L0651: 1,
L0805: 1, L0655: 1,
L0606: 1, L0527: 1,
L0635: 1, L0382: 1,
L0809: 1, L0792: 1,
L0663: 1, S0216: 1,
H0144: 1, H0520: 1,

| 128 | HHPGO40 | 1299927 | 138 | 116 - 1000 | 654 | H0521: 17, H0522: 12, S0114: 3, S0116: 3, H0402: 2, H0634: 2, S0440: 2, H0547: 2, S0292: 2, L0756: 2, H0265: 1, H0556: 1, H0686: 1, S0134: 1, S0218: 1, L0785: 1, H0254: 1, H0638: 1, H0637: 1, H0747: 1, H0370: 1, H0559: 1, H0490: 1, H0485: 1, H0635: 1, S0474: 1, H0581: 1, H0421: 1, H0597: 1, H0620: 1, H0051: 1, H0083: 1, H0252: 1, H0063: 1, H0059: 1, H0625: 1, L0667: 1, L0768: 1, L0653: 1, L0659: 1, | H0519: 1, S0328: 1, S0380: 1, S0404: 1, H0436: 1, S0392: 1, S0028: 1, L0745: 1, L0779: 1, L0777: 1, L0752: 1, S0260: 1, L0480: 1, S0026: 1, H0665: 1, S0192: 1, S0194: 1, H0423: 1, S0424: 1 and H0506: 1. |

	HHPGO40	753270	409	68 - 973	925			L0783: 1, L2260: 1, H0702: 1, H0701: 1, H0539: 1, H0518: 1, H0727: 1, L0366: 1, H0543: 1 and H0423: 1.
	HHPGO40	560969	410	74 - 745	926			
129	HHSDX28	553494	139	90 - 260	655			S0051: 1 and H0445: 1.
130	HILCF66	636025	140	331 - 465	656	Gln-23 to Asn-28, Gly-38 to Ile-43.		L0794: 2, T0002: 1, H0685: 1, H0638: 1, L0586: 1, T0010: 1, L0055: 1, S0440: 1, L0662: 1, H0519: 1, S0378: 1, S0406: 1, L0748: 1, L0750: 1, L0756: 1 and L0731: 1.
131	HJABB94	456466	141	74 - 307	657	Ala-28 to His-41, Pro-43 to Gln-64.		H0624: 1, S0360: 1, H0586: 1, L0021: 1, T0041: 1 and L0779: 1.
132	HJACG02	1307789	142	66 - 392	658	Val-54 to Asp-59.		S0442: 4, L0764: 4, S0408: 3, H0306: 2, H0263: 2, H0596: 2, L0800: 2, L0755: 2, S0116: 1, S0358: 1, H0489: 1, H0597: 1, T0041: 1 and L0772: 1.
	HJACG02	509948	411	47 - 373	927	Val-54 to Asp-59.		
133	HJACG30	895505	143	291 - 425	659	Thr-26 to Asn-39.	15,X	H0069: 3, T0041: 2, H0436: 2, H0318: 1, L4747: 1, L0646: 1,

						L0766: 1 and L0803: 1.
	HJACG30	821341	412	50 - 439	928	Pro-57 to Pro-64.	
	HJACG30	774300	413	350 - 715	929	Lys-1 to Gly-8.	
134	HJBCY35	719729	144	232 - 1215	660	Glu-35 to His-41, Ser-62 to Ala-67, Pro-145 to Leu-155, Glu-157 to Ser-163, Arg-190 to Val-197, Asp-208 to Pro-215, Ser-247 to Pro-252.	H0618: 16, H0617: 13, H0253: 11, H0457: 6, L0766: 6, L0769: 5, H0255: 4, H0559: 4, H0181: 4, L0748: 4, H0170: 3, S0051: 3, H0622: 3, L0770: 3, L0653: 3, L0743: 3, L0779: 3, H0341: 2, H0484: 2, S0049: 2, H0620: 2, H0424: 2, H0135: 2, H0040: 2, H0059: 2, H0100: 2, T0042: 2, S0002: 2, L0758: 2, L0588: 2, H0171: 1, S0134: 1, H0650: 1, H0657: 1, H0656: 1, S0116: 1, L0534: 1, H0637: 1, S6026: 1, S0300: 1, L0717: 1, H0549: 1, H0550: 1, S6014: 1, H0333: 1, L2504: 1, L2522: 1, H0427: 1, L0021: 1, H0599: 1, H0545: 1, H0150: 1, L0157: 1, S0050: 1,

135	HJMBI18	545492	145	574 - 816	661	Thr-26 to Met-33.	H0355: 1, H0252: 1, L0483: 1, H0068: 1, S0036: 1, H0038: 1, H0087: 1, H0272: 1, H0623: 1, T0041: 1, L4747: 1, L3904: 1, L3905: 1, L0761: 1, L0645: 1, L0648: 1, L0662: 1, L0768: 1, L0774: 1, L0776: 1, L0658: 1, L4669: 1, L0659: 1, L0382: 1, L0665: 1, L2257: 1, L2260: 1, H0547: 1, H0711: 1, H0670: 1, H0672: 1, S0350: 1, H0696: 1, H0704: 1, L0744: 1, L0439: 1, L0749: 1, L0777: 1, L0780: 1, L0731: 1, L0757: 1, S0436: 1, S0276: 1 and H0543: 1. L0803: 3, L0805: 3, L0439: 3, H0341: 2, L0483: 2, L0663: 2, H0520: 2, S0380: 2, L0411: 1, S0418: 1, H0574: 1, H0427: 1, H0545: 1, H0009: 1, S0051: 1, H0623: 1,